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THE SOUTHERN MEDICAL JOURNAL

JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION

INCORPORATING THE GULF STATES JOURNAL OF MEDICINE AND SURGERY AND MOBILE MEDICAL AND SURGICAL JOURNAL

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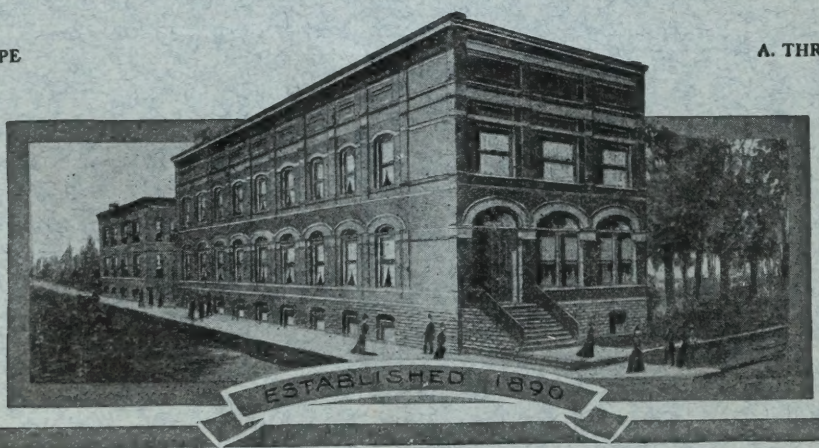

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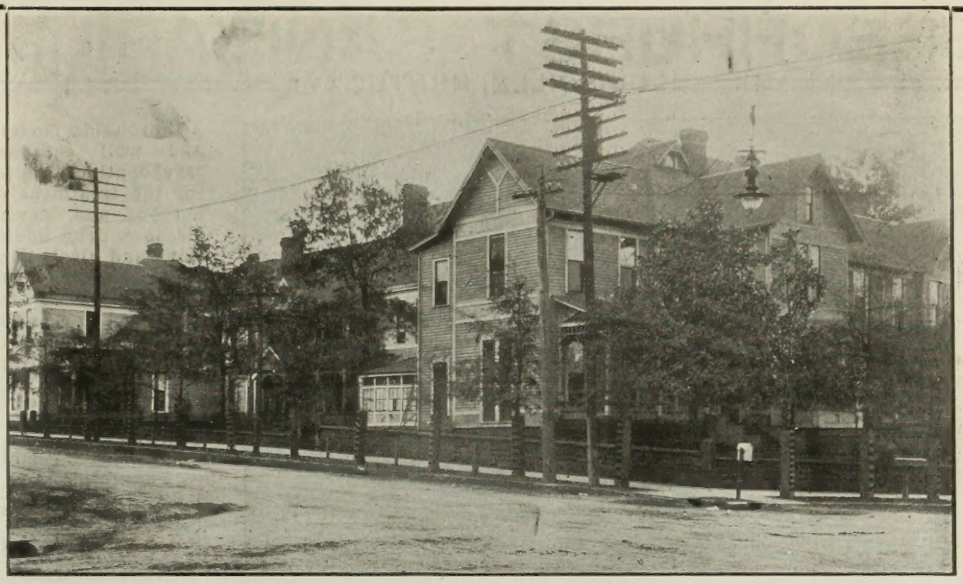

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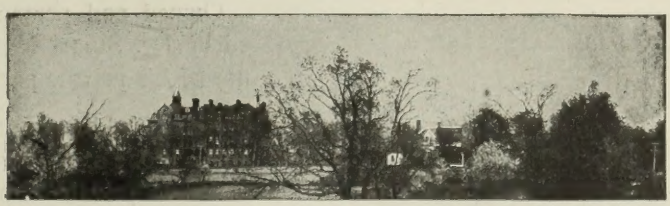

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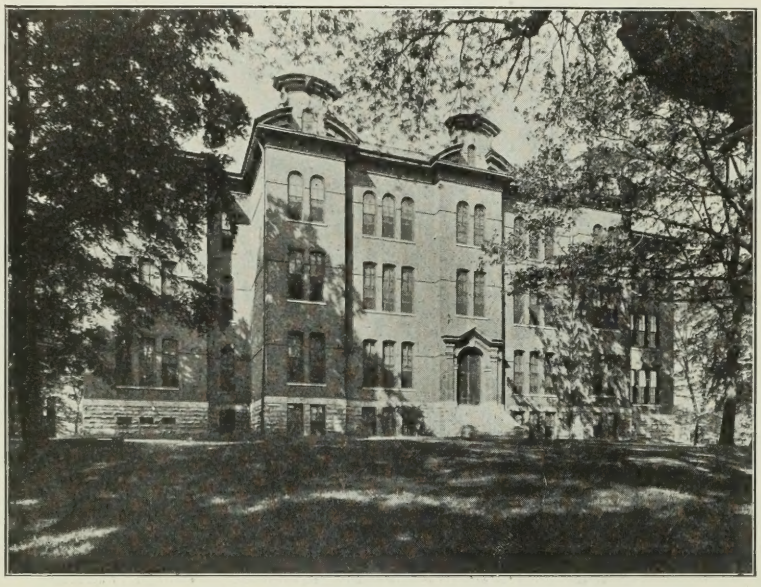

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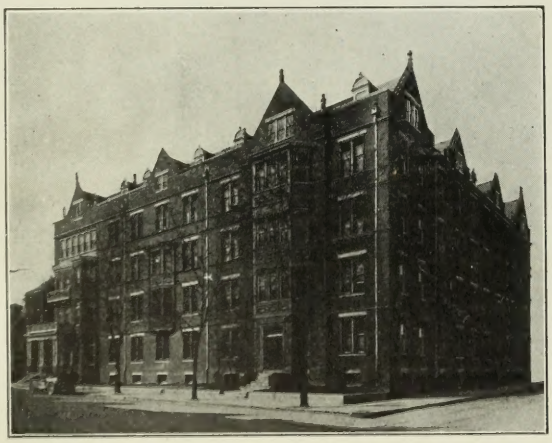

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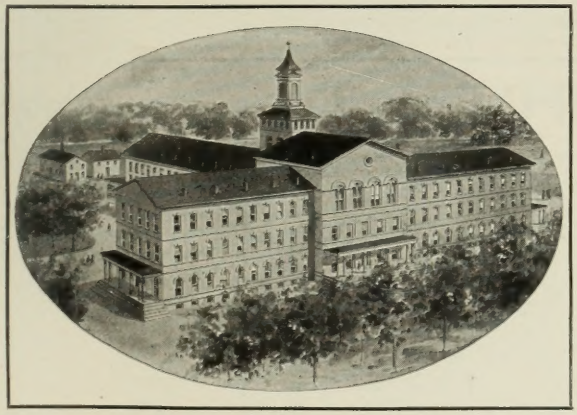

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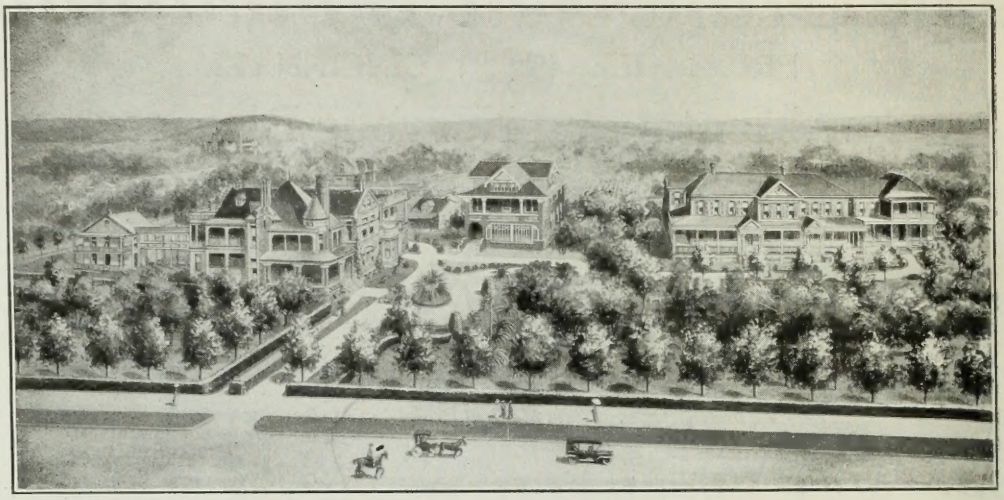

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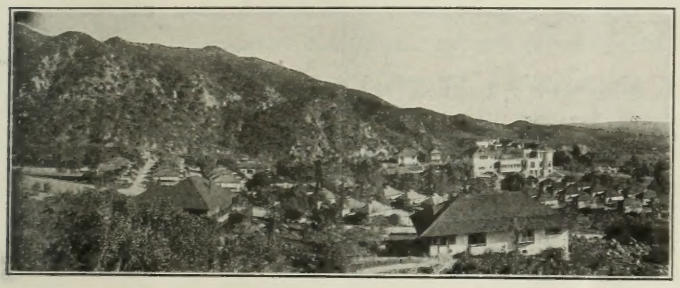

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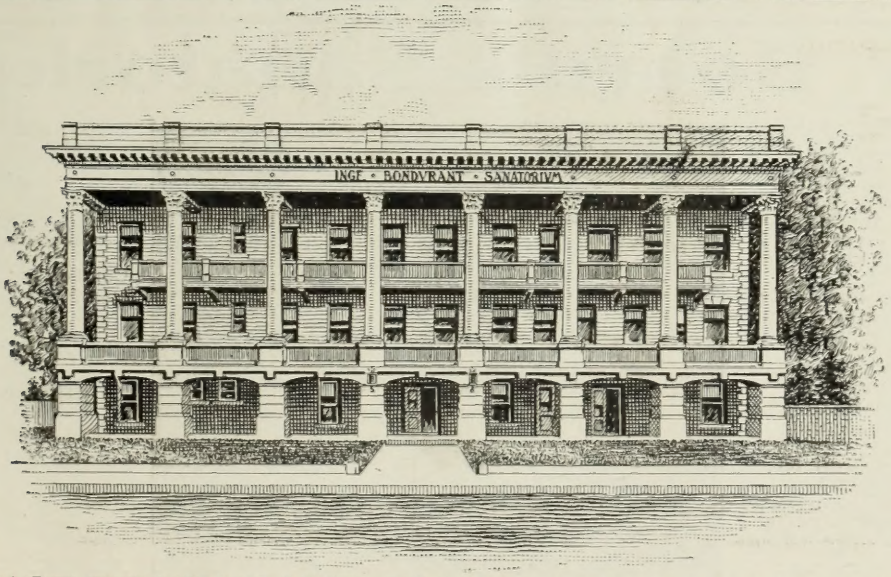

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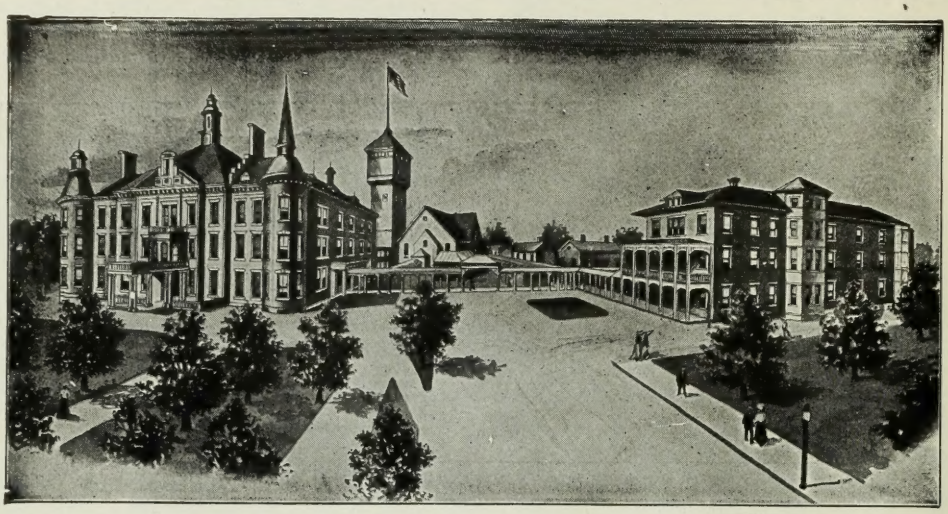

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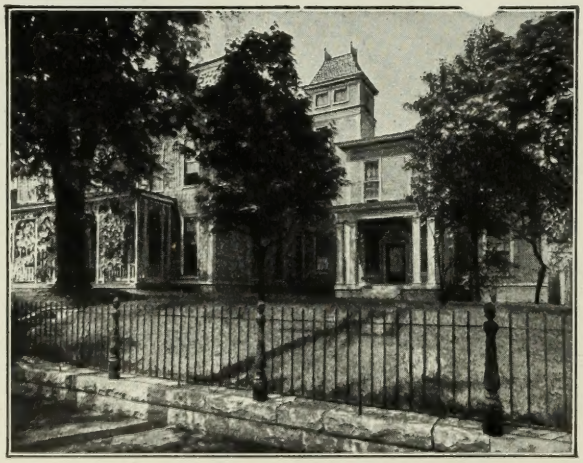

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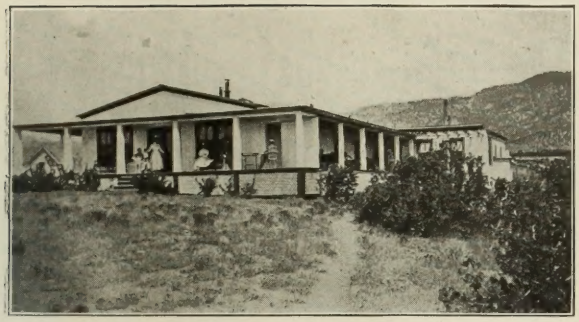

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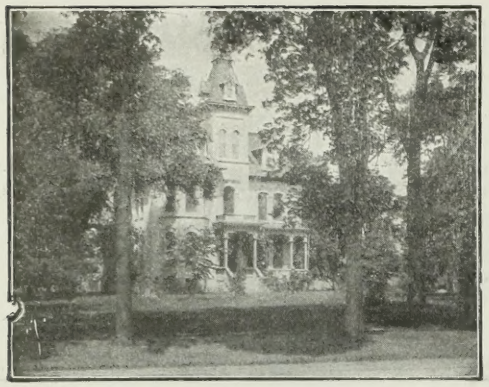

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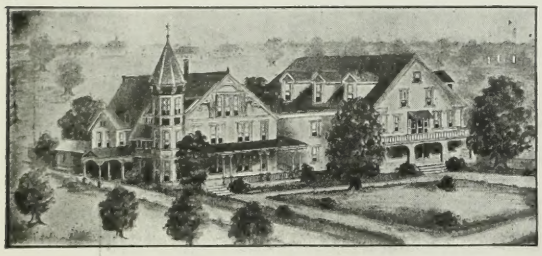

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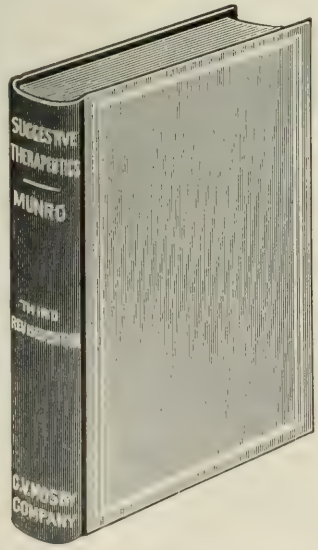

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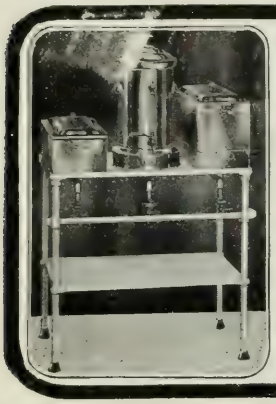

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ORIGINAL ARTICLES

THE PRACTICAL VALUES OF THE ROSS "THICK FILM" METHOD IN THE DIAGNOSIS OF MALARIA.

By W. M. JAMES, M.D.,
Ancon, Canal Zone.

III.

(CONCLUDED FROM OCTOBER NUMBER.)

THE LENGTH OF TIME THE PARASITES CAN BE DEMONSTRATED AFTER THE ADMINISTRATION OF QUININE.

This is an important point, and of great interest in the differential diagnosis in doubtful cases in which more or less quinine has been exhibited prior to the examination of the blood. I have divided these cases into two groups. Group 1, cases in which quinine had been administered in varying doses before admission, and Group 2, cases in which no quinine had been taken prior to admission. In Group 1 it is not possible to state the amount of quinine given before entrance. Subsequently to admission, routine treatment with quinine, which consists of quinine, grains xx, on admission, and grains x three times a day on the following days, was given to all cases in Groups 1 and 2.

TABLE 3—ESTIVO-AUTUMNAL MALARIA.

Group 1—Quinine in Varying Doses Before Admission.

Parasites found on the day of admission only.6 cases
Parasites found for two days.....5 cases
Parasites found for three days.....4 cases
Parasites found on second day only.....2 cases

In one patient, to whom no quinine was given, parasites were found in the blood every day for nine days, and for three days after the routine treatment was started. This was a very light infection.

Of the six cases in which parasites were found on the day of admission only, Dr. Carter's examination was negative in five. Of the six, one was a very scanty infection, without further fever while in the hospital; one was a moderate infection, in which quinine had been given him for two days prior to admission; in two crescents only were found; and in the sixth, quinine had been given for four days in the sick camp.

One of the cases in which parasites were found for three days after admission is of interest, in that thirty grains of quinine per day for four days prior to admission had been exhibited.

Of the two cases in which parasites were found on the second day only, crescents alone were found. One had been taking quinine for three days in the sick camp, and the other for seven. Acute tonsilitis was the cause of admission in the latter.

TABLE 4—TERTIAN MALARIA.

Quinine in Varying Doses Before Admission.

Parasites found on the day of admission only.2 cases
Parasites found for two days.....2 cases
Parasites found for three days.....3 cases
Parasites found for four days.....3 cases
Parasites found on the second day only.....1 case

In the two cases positive on the day of admission only, Dr. Carter's examination was negative in both. One had taken quinine for three days in the sick camp, and one for four. Gametes only were found in one. Of the two cases positive for two days, one was a

very light infection, and quinine had been given for four days in the other.

The case in which tertians were found on the second day only is of interest. The patient had been ill four days, and had been in the sick camp with a temperature of over 102 for three. Quinine in doses of 45 grains per day had had no effect in reducing the fever. On admission, gametes only, and these very few in number, were demonstrated in the thick film, the routine slide was negative. No quinine was given on admission or while the patient was in the hospital, and the temperature fell from 103.5 to normal on the third day. It remained normal until discharged ten days after admission. The Widal test for typhoid fever was negative, but unfortunately no blood culture was taken. Drs. Carter and Deeks diagnosed this case as "Acute Infection of Undetermined Etiology," as no physical signs or blood tests revealed any cause for the fever. Certainly, the temperatures could not have been attributed to tertian malaria.

Table 5—Estivo-Autumnal Malaria.

Group 2—No Quinine Before Admission. All Cases Placed on Routine Treatment on Admission.

Parasites found on admission only	2 cases
Parasites found for two days	3 cases
Parasites found for three days	5 cases
Parasites found for four days	3 cases
Parasites found for five days	1 case
Parasites found for six days	1 case
Parasites found for seven days	1 case

In 11 of the 16 cases parasites were found for three or more days, and this when quinine had been administered in full doses. Of the two cases in which parasites were found on the day of admission only, one was a bronchitis complicated with malaria, in which the infection was very scanty, and probably latent; the other was a pernicious malaria, and the patient died shortly after admission. In the three cases in which parasites were found for two days after admission, very scanty infections were present.

Table 6—Tertian Malaria.

No Quinine Before Admission. All Cases Placed on Routine Treatment on Admission.

Parasites were found for two days	3 cases
Parasites were found for three days	5 cases
Parasites were found for four days	3 cases

In eight of the eleven tertian infections parasites were found for three days or more after the exhibition of quinine.

In the mixed infections parasites were found for three days.

In the quartan infection, parasites were found for five days. In the tertian, mixed, and quartan infections, the schizonts disappeared very rapidly, so that on the last day only gametes were found.

From these data I infer that by the use of the thick film method, parasites can be found, on the average, for three days after the administration of quinine, even in latent and scanty infections. In active infections of some intensity, the average is four days or more, depending on the intensity of the infection and the amount of quinine absorbed by the patient.

The Relation Between the Occurrence of Parasites in the Peripheral Blood and the Presence of Fever.

As yet I have not obtained a pipette that will measure accurately small quantities of blood, so that my results are qualitative, and not quantitative. However, the exact number of parasites requisite for the production of fever, important as it is in the determination of data, is not of as much practical value to the physician as is the answer to the question: When the fever is due to uncomplicated malaria, are the plasmodia present in sufficient numbers as to be readily demonstrated?

My results, which I shall present briefly, indicate that a five-minute search in the thick film will result in the finding of the plasmodia in all instances when the fever is due to the presence of these organisms. And I am confident that exceptions to this statement will

be more apparent than real, and will be due more to faulty technique, inexperience in the recognition of parasites, and incorrect diagnosis, than to errors in the premises.

TABLE 7—ESTIVO-AUTUMNAL MALARIA.

Quinine Before Admission and Routine Treatment Subsequently—Seventeen Cases.

	Total	Aver.
Days of fever in the hospital.....	17	1.00
Days on which parasites were found..	30	1.76
Fever days on which parasites were found	14	.82
Fever days on which parasites were not found	3	.11
Days of apyrexia on which parasites were found	16	.94

In six cases there was no fever while the patients were in the hospital. The greatest number of fever days in uncomplicated malaria was three, in one case only. Of the three fever days on which no parasites were found, on two the temperature was but 99.5, in patients who had been taking quinine in the sick camp for several days prior to admission; on the third, the temperature was 100 on the third day, in a patient who had a well marked basal bronchitis complicating his malaria.

One case is of much interest. For three days after admission the patient ran a continued fever between 101 and 102, and parasites were found on each day. On the fourth day the temperature was normal. On the tenth day after admission, and the seventh of normal temperature in the morning, there was an afternoon rise to 100. For the next four days the fever increased, each afternoon being higher than in the morning, and this despite the 30 grains of quinine which had been taken daily since admission. No parasites were found after the third day after admission. The blood culture taken on the third day of the second febrile period, and the thirteenth after admission was positive for B. typhosus, and the Widal reaction taken on the same day was positive also. A case of typical typhoid developed and ran the usual course.

In one case quinine was withheld for nine days after admission. At no time were the parasites very plentiful, on three days they were demonstrated only by use of the thick film. There was fever every day, and not only were parasites found on the nine fever days, but also for three days after the fever had ceased, and quinine had been given in doses of 30 grains per day.

In these 17 cases the parasites were demonstrated every day when the fever was above 100. Three were cases of latent malaria, complicating respectively dysentery, convalescent tonsillitis, and bronchitis. In these three the parasites were very scanty, and were demonstrated in the thick film only. There was no fever in the cases of dysentery and tonsillitis, and had not the parasites been picked up in the thick film, quinine might not have been given, and very probably relapses would have followed.

TABLE 8—ESTIVO-AUTUMNAL MALARIA.

No Quinine Before Admission, Routine Treatment Subsequently—Sixteen Cases.

	Total	Aver.
Days of fever in the hospital.....	34	2.12
Days on which parasites were found..	55	3.43
Fever days on which parasites were found	32	2.00
Fever days on which parasites were not found	2	.12
Days of apyrexia on which parasites were found	23	1.43

All cases had fever at some time while in the hospital. In six the fever lasted one day only. Of these, one was a pernicious malaria that died shortly after admission. In the thick film from this patient the number of parasites was too numerous to admit of a proper count, but was estimated at from 400 to 1,200 or more to each field. This will give some idea of the enormous number of organisms in the blood in such a case. One case developed malaria while under treatment for another disease, and the others were very scanty infections, in which the parasites were not found in the routine smears.

In one case, a severe one, there was fever for five days, on each of which parasites were found, and these were present also for two days after the fever had ceased. In another, there was fever for the first four days after

admission, and parasites were found on the fever days, and the next two days also.

There were two cases in which fever was present and the parasites were not found at the same time. One of these was that of a patient who came from a house from which two cases of typhoid fever had been sent in to the hospital shortly before. This patient had manifested a continued fever for ten days prior to admission. On admission his temperature was 102, on the second day, 100, and on the third, 99.5. He had taken quinine every day for the ten days prior to admission. On admission, one ring form was found after four minutes' search, and on the third day one crescent was seen. The blood culture and the Widal test were negative. In this case I do not believe that the fever was a manifestation of uncomplicated malaria. In the other case there was a rise to 100.5 on the fourth day after admission, after two days of normal temperature. As the patient had been constipated for two days prior to this rise, I attributed the temperature more to the constipation than to malaria, for a slight fever very frequently follows constipation during convalescence in malaria.

Excluding these two cases, parasites were found on every fever day while the patients were in the hospital in all cases of estivo autumnal malaria in which quinine had not been exhibited prior to admission, but was given subsequently.

TABLE 9—TERTIAN MALARIA.

Quinine Before Admission, Routine Treatment Subsequently—Eleven Cases.

	Total	Aver.
Days of fever while in the hospital....	16	1.45
Days on which parasites were found..	29	2.63
Fever days on which parasites were found	13	1.18
Fever days on which no parasites were found	3	.27
Days of apyrexia on which parasites were found	16	1.45

Of the three febrile days on which no parasites were found, on one the temperature was 99.5, on the fourth day after admission following two days of normal temperature with constipation; on the two others the fever was due to causes other than malaria in cases in which a very few tertian gametes had been found, and these on admission only.

In all cases of uncomplicated tertian malaria in this class, parasites were found when the temperature was above 99.5.

TABLE 10—TERTIAN MALARIA.

No Quinine Before Admission, Routine Treatment Subsequently—Eleven Cases.

	Total	Aver.
Days of fever while in the hospital...	19	1.72
Days on which parasites were found.	36	3.27
Fever days on which parasites were found	18	1.63
Fever days on which no parasites were found	1	.9
Days of apyrexia on which parasites were found	18	1.63

In this class, on the only fever day on which parasites were not found, the temperature was but 99.5, and followed two days of constipation.

In the two mixed estivo-autumnal and tertian infections, parasites were found for three days after admission in each, and on each day when fever was present. In the quartan infection there were two days of slight fever, and parasites were found on these, and on three days of apyrexia.

Four cases were diagnosed as clinical malaria, i. e., malaria in which the parasites were not found. These were:

Case 26. Continued fever for three days prior to admission. After admission, continued fever for five days, followed by normal temperature on the sixth day. Before admission, ten grains of quinine four times a day for two days had been exhibited. After admission no quinine was given until the seventh day, when the patient was put on routine treatment. Thick films and routine smears were carefully examined twice a day for five days after admission, but no parasites were found.

Case 35. Chills and fever for three days prior to admission. Temperature on admission was normal, and remained so until discharge. Prior to admission, quinine had been

taken in doses of ten grains three times a day for two days. After admission, no quinine was given until the fifth day, when the routine treatment was exhibited.

Case 57. Continued fever for four days prior to admission. On admission, temperature, 104. Fever for two days after admission, when the temperature became normal, and remained so until discharged. Before admission, the patient had taken ten grains of quinine three times a day for four and one-half days. After admission, no quinine was given until the fourth day, when the routine treatment was started. The Widal test on the second day was positive. The stool and urine were negative for B. typhosus and allied strains. Four days prior to admission estivo-autumnal parasites had been found by the district physician while the patient was in the sick camp. Thick films were made twice a day for four days while in the hospital, including the day of admission, and no parasites were found.

Case 86. Fever at irregular intervals for several days prior to admission. No fever on admission or subsequently. Before admission, quinine in doses of ten grains three times a day for three days had been given, after admission the patient was placed on routine treatment.

In their very careful work on typhoid and the allied fevers,* Deeks and Brown proved that in the Canal Zone there are six classes of continued fever due to infection with B. Typhosus and similar organisms. In such cases B. typhosus, B. intestinalis, and four strains of paracolon bacilli were recovered from the blood in the course of their investigations. They demonstrated that five, six, and seven day fevers result not only from infection with B. typhosus and B. intestinalis, but also from infections with the para-colon group, particularly with the latter. Formerly such short fevers had been diagnosed as clinical malaria, unless a co-incident malarial infection were also present in sufficient quantity as to be demonstrated in the peripheral blood. The different diagnosis between such fevers and malaria when the parasites were not found could be made only by blood cultures, which, to be positive, had to be taken within the first two or three days of illness; a continued fever that did not yield to large doses of quinine; and the absence of parasites. When these were present a positive blood culture was a necessity if the diagnosis were to be made other than malaria.

Now, quite frequently the fever of a severe malarial infection will not yield to quinine until the fourth day, and the temperature chart of such a case, the clinical symptoms, the pulse rate, and the respiration rate will often resemble those of one of the fevers of short duration due to infection with B. typhosus or allied strains. It will be noted that Cases 26 and 59 manifested a continued fever that did not yield to quinine, the one for eight days, and the other for six. Unfortunately, blood cultures were not taken, and the positive Widal in Case 57 of itself is not of any great diagnostic significance. In none of the positive malarial cases with similar temperatures, but shorter fevers, were the parasites absent from the peripheral blood, and this whether or not quinine had been administered.

In view of these facts, I think it is at least probable that Cases 26 and 57 were obscure typhoid-like fevers, if, indeed, they were not true typhoid infections of short duration, and I do not believe that the failure of the thick film method to demonstrate parasites in these two cases was due to any cause other than the absence of the organisms. In this, Drs. Carter and Deeks agree with me. Cases such as these present the greatest difficulty in the differential diagnosis between malaria and the typhoid and para-colon fevers of short duration, unless one has confidence, as I have, in the reliability of the thick film method. In a continued fever, with a temperature of 101-103, or higher, if the parasites cannot be found within the first twenty-four hours, and no

cause of illness, such as suspected or positive tuberculosis, pneumonia, or some similar disease can be determined, it is well to suspect typhoid fever, and, when possible, to have a blood culture taken. Even when parasites are present at the onset of the fever, if there is a *continued* temperature between 101 and 103, or higher, for more than three days, the case should be regarded as suspicious of typhoid, if no other reason for the fever can be found. Undoubtedly such five and six-day cases, partially or mistakenly diagnosed as malaria, are very instrumental in the spread of the typhoid and para-colon fevers; diseases which, while mild in the carrier, may prove fatal to those subsequently infected.

There were 37 cases in which the blood was negative on admission and afterward, in which the diagnoses were other than malaria. Of these, 20 had fever on admission, and five manifested a continued temperature of over 100 after admission. In two of these cases only was quinine exhibited after admission. In the blood of one of these estivo-autumnal parasites had been found seven days prior to admission, and the patient had taken 30 grains of quinine daily since. On admission he was found to have a well marked bronchitis. The other case was one of typhoid fever, in which the quinine was given before discharge as a prophylactic against a possible malarial relapse.

Of the five cases with continued fever after admission, two were pneumonia, and three typhoid fever.

All of these 37 cases were kept in the wards for at least seven days after the temperatures became normal, frequent blood examinations were made, with negative results, and since none of them developed malaria, it is improbable that any of them were malarial in type.

THE RELATION BETWEEN THE NUMBER OF PARASITES IN THE PERIPHERAL BLOOD AND THE AMOUNT OF FEVER.

The only exact numerical work on this subject has been done by Ross and his associates in the Liverpool School of Tropical Medicine. However, although one may not estimate exactly the number of parasites, if all the films contain approximately the same amount of blood and are of average thickness, infections may be classed as scanty, light, moderate, heavy, and very heavy, with considerable accuracy.

It is most important to remember that the highest degree of fever during a paroxysm is not associated at the same hour with the greatest number of parasites in the peripheral blood. In tertian and quartan infections the fever is highest at the time of sporulation, and the parasites most plentiful 24 hours before; in estivo-autumnal malaria the fever is, as a rule highest at the time of sporulation, or later, at the "crisis," while the parasites are most abundant at the beginning of the intermission, or remission, as the case may be. It is the number of parasites prior to the paroxysm, and not the number during it, that determines the degree of fever. So that in correlating the relationship between the intensity of the infection and the amount of the fever, the number of parasites must be determined at the time when these are present in greatest quantity, and this number be used as an index to the degree of fever during the subsequent paroxysm. It not infrequently happens that a high degree of fever following the sporulation of a large number of parasites is succeeded by a slight fever with very few parasites, and this is true even when quinine has not been exhibited. Also, if quinine has been administered from the onset of the paroxysm, the followng paroxysm may be very mild, although the parasites were present in large numbers in the preceding one. The susceptibility of the patient to the effects of the infection, or his relative or absolute immunity against the toxic products of the parasites, and the "virulence" of the plasmodia themselves should be given weighty consideration.

As has been noted, Ross, in his "Prevention

of Malaria," has estimated the number of parasites requisite for the production of fever. He states:

"But for a broad general rule we may, I think, accept the principle (pending more exact researches) that if we cannot find the parasites after careful search, their number is not usually sufficient to produce fever. Hence I calculate that they will not generally be numerous enough to cause illness unless there is at least one parasite to 100,000 hematids (erythrocytes); that is, 50 parasites in a c.mm. of blood, or 150,000,000 in a man of 10 stone (64 kilograms) in weight." Page 91.

In the appendix to his book, Ross says:

"With twenty-five cases of malaria some of our results are, briefly, as follows:

"When fewer than about 1,000 per c.mm. the sporoids (asexual parasites) are not always numerous enough to cause marked rise of temperature. They may remain present in very small but detectable numbers during every day between relapses. A rise in their numbers to about 1,000 or more is generally accompanied by a febrile relapse and followed by a fall in hemoglobin. A fall in the number of malignant sporoids (estivo-autumnal asexual parasites) may be followed by such an abrupt and high rise that the said fall cannot be due to the death of the parasites, but must be caused by their retirement from the peripheral blood,—thus proving the hypothesis of Marchiafava and Bignami." Page 640.

I can confirm the latter part of this statement, for I have not seldom found a few parasites only in the peripheral blood shortly before death, when in autopsy preparations they were present in very great numbers, especially in the capillaries of the brain, in the spleen, and, in fewer numbers, in the bone marrow.

In his latest work, "Some Enumerative Studies on Malaria, Blackwater Fever, and Sleeping Sickness," Trans. Soc. Trop. Med. and Hyg., Vol. IV., No. 5, March, 1911, Ross presents more exact figures. He places "the pyrogenic limit," i. e., "the lowest number of asexual forms required to produce fever," at 200-500 per c.mm. P. vivax, (the tertian parasite) and about 600-1,500 B. falciparum (the estivo-autumnal parasite). Also he quotes Sims as taking "500 as the limit."

By the use of the thick film method, the space occupied by 100,000 erythrocytes can be examined in about two minutes. If Ross's latest figures be correct, and the number of erythrocytes be estimated at 5,000,000 per c.mm., parasites would be found in tertian malaria, provided enough of them are present to cause fever, in at least the ratio of 1 to 25,000-10,000 erythrocytes, and in estivo-autumnal malaria, in the ratio of 1 to 8,333-3,333.

I suppose that these figures apply to the time when the parasites are present in greatest numbers in the peripheral blood, and the ratio of 1-100,000 to any time that the blood is examined. I do not think it proper to criticise Ross's careful counts, but it appears to me that the first mentioned figures are somewhat high; for, if parasites be present in the proportion indicated, they should be found, at the time of greatest prevalence, on an average of one to one or two fields in tertian malaria, and one or two to the field in estivo-autumnal infections, if they are producing fever. In severe infections, at the time of greatest frequency in the peripheral blood, the parasites as a rule are far more plentiful than this, but on the other hand I have observed well marked paroxysms when the parasites were found only after considerable search, and this at the apyretic interval before the paroxysms.

However, when every allowance is made for irregular distribution of the parasites, I believe that Ross's figures are approximately correct, and should be taken as criteria in determining the relationship between the number of the parasites and the degrees of fever. It is also true, as Ross and others have observed, that the amount of the fever is, as a rule, in proportion to the number of parasites.

However, it should not be forgotten that the temperature alone is not the most important symptom in malaria, for in some very pernicious cases, with enormous numbers of parasites present, I have observed a temperature of not over 101, and in algid malaria there is a great quantity of parasites, and practically no temperature. It would be better, I think, to say that in most cases the number of parasites is in proportion to the severity of the symptoms, excluding those cases in which sometimes a severe nephritis complicating the malarial attack gives rise to untoward symptoms, and the parasites are few in number during the attack, and even in autopsy preparations.

Ross states that a fewer number of parasites is required for the production of fever in the tertian infection than in the estivo-autumnal. In my opinion, this is correct; for, although the number of parasites often seems fewer in the latter, this is more apparent than real, and is due to the tendency of the estivo-autumnal parasites to accumulate in the internal circulation during the greater part of the paroxysm. But as a rule, even in the peripheral circulation, estivo-autumnal parasites are more plentiful in proportion to the degree of fever than are tertians, and I have yet to witness a tertian infection that is comparable in intensity with the number of parasites observed in pernicious estivo-autumnal malaria.

If, then, Ross's figures are accepted as approximately correct, and I believe that they should be so taken, it is evident that uncomplicated malaria does not produce fever unless the parasites are present in the peripheral blood in numbers sufficient to be readily demonstrated by the thick film process, provided the search is made intelligently. And it must be true that the organisms will be found in all cases when the fever and other symptoms are severe. We should not, then, with this method at our disposal, attribute to malaria fevers of which the etiology is obscure, since we are able to find the parasites if the illness is due to uncomplicated malaria. That such is the case, I am convinced by the results obtained in the 100 consecutive cases that I have studied, and by those in several hundred subsequent admissions.

I wish to state it as my belief that this method of Ronald Ross's will prove of a great practical value to the practitioner as his more famous discovery has been of worth to the sanitarian.

I am greatly indebted to Dr. H. R. Carter, Jr., of this hospital, without whose hearty cooperation and untiring labor this work could not have been done, to Dr. W. E. Deeks, Chief of the Medical Clinic, for his aid in placing the necessary time at my disposal, his help in the diagnosis of the non-malarial cases, and for many suggestions to Dr. S. T. Darling, for his suggestion of the use of acid alcohol; and to Lieut. Col. John L. Phillips, Medical Corps, U. S. A., Acting Chief Sanitary Officer, Isthmian Canal Commission, for permission to publsh this paper.

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URTICARIA OEDEMATOSA, FOLLOWING THE USE OF THE CUTANEOUS TUBERCULIN REACTION IN A CASE OF LUPUS ERYTHEMATOUS DISSEMINATUS.

By J. LEE KIRBY-SMITH,
Jacksonville, Fla.

In a brief search through the standard tests on Dermatology, and some medical literature, I fail to find a report of a similar case, "Giant Urticaria Following the Cutaneous Tuberculin Test." I trust this report will be of some interest to the profession.

CASE HISTORY.

Mrs. "H.," age 38, wife of a physician, referred to me for treatment March 21, 1911, duration of the skin disease six years, has been treated by a number of physicians with various methods, and on the whole without any lasting result. On one or two occasions most of the lesions spontaneously disappeared, but to return again with greater intensity.

Twelve years ago the patient had a general "break-down" in health from over work (had been working for hours daily at portrait painting), pulmonary tuberculosis was suspicioned, but never positively diagnosed. At the suggestion of her physician the patient and her husband moved to Florida to live.

Several members of her immediate family have died of tuberculosis. Tuberculous adenitis was suggestive at one time, by a persistent enlargement of the cervical glands.

After a few years in Florida, the patient regained her usual health, which had been fair previous to the "break-down," and aside from her skin disease, she has had no positive symptoms of tuberculosis.

PHYSICAL EXAMINATION.

Fairly well nourished woman, weighs about 120 pounds, height 5 feet and 2 inches, lymphatic glands in the neck slightly enlarged, throat congested, tonsils enlarged, chest explansion slight on left side, small area of dullness on percussion near the left apex, otherwise lungs negative; heart sounds fair.

Patient has symptoms of a retro-verted uterus, which she says followed after an automobile accident several years ago; also complains of indigestion. The patient's family physician for the past ten years has examined her a number of times for signs of tuberculosis, but has never been able to make a positive diagnosis.

In 1905 the present skin trouble first appeared; the lesions were first on the face; began as erythematous patches on the cheeks, and under the eyes; also on the nose; the patches in time would become scaly and would be resistent to all local treatment; several times most of the lesions seemingly disappeared of their own accord, though to return in a short time more extensively than before.

Two years ago the patient consulted Dr. A. R. Robinson, of New York City. At this time there were only a few thickened, scaly erythematous lesions on the face. These were treated with "CO_2 snow." At the present time the "very thin-hardly-noticeable scarring" is well illustrative of the value of the freezing method of treating erythematous lupus.

When first seen by me, there was no question in my mind as to the positiveness of the diagnosis; from a standpoint of treatment and a general prognosis, I was anxious to establish a diagnosis of tuberculosis. It is generally conceded by most dermatologists and verified by the pathological findings that there exists some foci of tuberculous infection of some organ in patients having lupus erythematosus.

Before going any further a brief description of the skin lesions is in order.

Located on the face, neck, hair-margins, ears, and back of the ears, hands, and arms;

also the upper part of the chest are a number of erythematous lesions of various sizes and shapes, covered in most cases with white tenacious scales, showing some tendency to central depression. A few of the lesions are thickened; there is some slight scarring from old lesions which have been cured; the typical "bat-wing" configuration about the nose and cheeks is present.

On March the 25th I decided to use the "Von Pirquet cutaneous test." A tube of fresh "Old Tuberculin" was obtained, human type (H. K. Mulford Co.). The inoculation was made on the forearm. The usual control of sterile distilled water was used.

Four hours later the patient began to complain of the feeling of "fleas biting," within eight hours there was a well developed urticaria. The husband of the patient tried to reach me by phone. Being unable to do so the family physician was called, who informed me later that he found the patient with fever 101, had had a chill just before his arrival, marked swelling of the face, eyes closed from the oedema, large urticarial weals on the body and extremities, considerable discomfort, restlessness, and unable to sleep.

The following day when seen by me the patient was confined to bed, body and extremities covered with large urticarial weals, face considerably oedematous; had developed a cough of a dry character, some temperature present; patient suffering considerably from the subjective symptoms of the rash, itching and burning sensations severe. After having used a lotion of calamine and oxide of zinc some comfort was obtained.

On the third day the urticarial symptoms, which had seemingly abated, now became active again, with new lesions appearing. After a few hours there was a general decline in the intensity of the rash, but not for a week did all the lesions disappear. In fact, some of those on the arm remained as erythematous spots, which later assumed the character of erythematous lupus.

The urine during the attack was highly colored, the specific gravity being 1027, a very slight trace of albumen present, but no tube casts found.

Some consideration of the intestinal origin of the urticaria was in order. It was carefully ascertained if the patient had eaten anything out of the ordinary. She strongly denied having eaten any food other than the diet prescribed by me at the beginning of my treatment, which diet as ordered, was of the "milk and egg regime."

After one week in bed the patient was able to get about comfortably, the cough had disappeared, and nothing of note to be found by examination of the chest. Aside from a congested throat and a slight enlargement of the cervical glands there were no symptoms of tuberculosis.

A number of the lesions on the face which were markedly erythematous before the development of the urticaria, became hardly noticeable a week later.

At this point mention should be made of the local reaction at the site of the inoculation, which showed a negative "Von Pirquet."

THE TREATMENT OF PULMONARY TUBERCULOSIS.

By FRANK SHERMAN MEARA, Ph.D., M.D.,
Professor of Therapeutics Cornell University Medical College,
New York.

(CONCLUDED FROM OCTOBER NUMBER.)

HYPERAEMIA.

Satisfied that this method of inducing a greater supply of blood to an inflamed part had resulted beneficially in certain local infections and accepting as correct the many reiterated statements that victims of heart disease, whose valvular defects on the left side of the heart led to hyperaemia of the pulmonary circuit, were far less commonly affected with tuberculosis than the average man in health or otherwise invalided, while affections of the right side of a stenotic character, leading to diminished blood supply in the pulmonary vessels were curiously susceptible to tuberculosis, the advocates of this treatment sought to apply it to diseases of the lung and especially tuberculosis.

The method used was to effect an interference with inspiration, by slight obstruction of the nares, so that when the chest wall expanded with the inspiratory effort, the negative pressure not being fully balanced by the positive atmospheric pressure, an aspirating effect on the blood would occur to the overfilling of the pulmonary vessels.

After many devices had been tried a mask was evolved, such as one uses in giving an anaesthetic, which regulates the intake of air without interfering with the output.

The mask is attached by a rubber band around the occiput, the patient lies on a bed or couch, preferably with the pelvis and legs a little higher than the shoulders. The head rests on a cushion. The clothes are loosened so as not to interfere with respiration.

At first the mask is applied but ten minutes, once a day; later twice a day. The slit controlling the air is at first wide open. Very gradually the length of time the mask is worn is increased, while the slit is continuously narrowed. This gradual change prevents a headache that occurs when too brusquely undertaken. Finally, the patients may wear the mask four or five hours a day with the slit admitting its minimum of air, and experience no discomfort from the procedure.

It is claimed that there is a bettering of the general condition, a gain in weight, a diminution of temperature, of dyspnoea and cough, an increase in haemoglobin and red cells; that the expectoration lessens; that in some cases the bacilli disappear; that the thoracic capacity increases and that the symptoms from bronchiectasis are ameliorated.

Haemoptysis contraindicates its continuance.

Small bodies of statistics have little value and often reflect the enthusiasm of the advocates.

We must wait upon the study of a large series of cases before we can draw any conclusion.

For a discussion of this measure with experiments see the Munchener Medizinische Wochenschrift, reported from the Heidelberg Polyclinic by Greef. Vol. 56 (1909), pp. 900-904 and 975-977.

SYMPTOMATIC.

There are many discomforting, distressing and at times dangerous symptoms arising in the course of this malady, which must be met as they arise, for which there is no one sovereign remedy, but for which many things may be tried, one or the other of which may bring relief. We should know the few things that are most likely to do good and what is equally important, least likely to do harm, and know them well. Expedients of lesser significance will multiply upon us in spite of ourselves and with their increase comes the temptation to be forever changing, before jus-

tice is done to any one thing. Restraint and balance are valuable attributes in a therapeutist and redound to his art. Winternitz has well said, "We have not yet a science of healing, only an art of healing. Therefore, it is not always the most learned physician who is the happiest therapeutist."

FEVER.

Nothing can do more for febrile cases than rest and fresh air. But when the infection is severe, the process is advanced or mixed infection occurs, then the fever remains. If continuously high, above 102 degrees F., it, in itself, is responsible in some measure for tissue destruction and more than that, causes the patient much discomfort. We seek to combat these results by the use of water and by drugs. Of these the better measure is hydrotherapy.

HYDROTHERAPY.

Sponging is the proper procedure, which may be carried out in the manner just described, exposing a part of the body at a time beginning with warm water and cooling a little more as the patient becomes accustomed to it down to 50 degrees F. or 40 degrees F. If the patient reacts poorly, remember to warm the patient by pack or bath and then sponge.

An alcohol rub or sponge with sea salt, one-half oz. to two pints of water quiets and induces sleep.

MEDICINES.

Every antipyretic known has been used in this condition. The best are the two closely allied bodies acetanilid and phenacetin, and antipyrin and its derivative pyramidon. Pharmacologically these bodies may be considered as belonging to one group.

The three first are the best known. Acetanilid is the most potent and the most toxic, antipyrin comes next and phenacetin last. Pyramidon, a dimethylamido-antipyrin, has lately come into favor in many quarters as a safe and effective drug. It has been claimed to be three times as powerful as antipyrin, to develop its action more slowly and operate a longer time.

Small doses repeated frequently for a few doses before the anticipated rise of fever are as effective as larger doses. Acetanilid, gr. i or ii; antipyrin, gr. ii or iii; phenacetin, gr. iii or iv, every hour for three to five doses. Acetanilid and phenacetin are insoluble in water and should be administered in capsules, wafers or powders. Antipyrin is freely soluble in water and may be so administered.

Pyramidon is given either in capsule or in water in small doses of gr. ii, three to four times, repeated at hourly intervals.

A favorite antipyretic of my own is as follows:

R.

Acetanilidi ..... 1.50 (gr. xxiiss.)
Sodii bicarbonatis ..... 1.00 (gr. xv.)
Caffeine citratae..... .50 (gr. viiss.)
M. et divide in capsules No. xv.
S. One every 1 or 2 hours.

These doses are not dangerous in any degree unless the patient has an idiosyncracy. The early cyanosis followed later by cardiac and respiratory depression are the cardinal features of their toxic action.

COUGH.

Perhaps no symptom is more trying to the patient or to the resources of the physician than cough. On the one hand, it subserves a useful purpose, as most symptoms do, but on the other hand it may do much harm as many symptoms may.

A discrimination, then, must be made between the cough that empties the bronchi and cavities of accumulated secretions and products of tissue destruction, the useful cough, and that cough which is the result of irritation, unaccompanied by expectoration, racking, exhausting, despoiling sleep and making it impossible for the patient to keep food on his stomach.

The first cough illustrated by the early morning cough, accompanied by abundant expectoration, is not to be prevented, but facili-

tated. Such a cough may occur at other times during the day. The cough and discharges are made more easily if a glass of water, hot, or hot milk with or without a teaspoonful of whiskey or brandy or 5 or 10 grains of bicarbonate of soda or a little Saratoga Vichy be given.

The useless cough may arise from one or more of many causes and the cause should be sought. Perhaps it is due to excessive irritability of the bronchi, of the pharynx or larynx or from pleurisy.

A cough gets to be more or less of a habit, too, and is to be combated as such.

Singing, laughing, rapid talking or walking, dust, smoke and other recognized irritants should be avoided.

Discipline, in the way of controlling the desire to cough, is often rewarded by much amelioration. First, one should try all the simple things to lessen the annoyance and because they are simple they are none the less efficacious.

Deep breathing exercises, change of position in bed, sucking ice, sipping orange juice, holding in the mouth lozenges of demulcent character, as slippery elm, licorice, marshmallow, glycerin, are among these measures. If there is irritation of the pharynx, mentholated lozenges may help or one containing a slight astringent, such as this:

R.

Extract krameriae
Potassii chloratis.....aa gr. xv.
Olei menthae piperitae.....m i or ii.
Extracti glycyrrhizae puri.....dr. iiss.
M. et divide in trochiscos no. xxx.
S. One as needed.

Such as these last with decided taste must be used sparingly, lest the stomach be upset or appetite impaired.

Inhalations of steam or steam medicated by adding compound tincture of benzoin or oil of pine a teaspoonful or two in a pitcher of hot water and inhale through a funnel made of paper, or from a croup kettle or similar contrivance, using about 1 teaspoonful to a pint.

An excellent inhalation for cough and especially when there is an abundant bronchial secretion is one made of equal parts of alcohol, creosote and chloroform, using 10 drops on the sponge of the little zinc perforated mask, fitting over the nose and mouth and known as a *Robinson's inhaler. It can be worn as much of the day as the patient deems fit to get relief.

If there is irritation in the pharynx sprays may be tried, 1 per cent of menthol or oil of pine in benzoinol or albolene or such a spray as follows:

R.

Menthol
Camphorae
Olei eucalypti.....aa 1.00
Benzoinol .....q. s. ad 100.00
M. et S. As spray.

The cough that comes on at night, so important because preventing sleep, may be mitigated by a warm drink on retiring, seeing that the bed is warm and by the application of the chest compress as used in pneumonia* or

*The same or similar device is sold under different trade names.

*The chest compress is prepared by cutting three folds of old linen of a sufficient size to fit the entire chest from the clavicles down to the umbilicus, with arm-holes in the region of the axillae made by exact measurement from one axilla to the other sufficiently deep to allow the upper edge of the compress to reach above the clavicles and admit of the junction of the flaps thus formed on each side to cover the shoulders. Two such jackets, and two pieces of closely woven thin flannel of the same shape, but an inch wider and longer, should be provided and fitted to the patient.

One of the linen compresses is rolled up and soaked in a basin of water at 60° F. and wrung out so that it remains quite damp without dripping. The flannel is now spread out upon an even surface and the wet compress put upon it, so that there remains an edge of flannel about an inch wide all around. Both are ralled together half way. While the patient is gently turned upon his left side, with the precaution of not allowing any exertion on his part, the compress is so placed upon the bed that the rolled part lies in close proximity to the left side of the patient and the lower edge of the left slit is under the left axilla. Now the patient is gently turned upon his back, so as to release the rolled up portion. The latter is now unrolled, and both edges of the compress are brought forward

upon the front of the chest and are thus made to envelop the latter snugly. The flannel cover which has been allowed to lie upon the bed during the application of the wet compress, is now brought forward so as to cover the latter. It is secured by two safety pins in front and one pin upon each shoulder.—*From Hydrotherapy, by Baruch.*

the cross binder. The cross binder is made of a roller of linen some 5 to 10 inches wide, according to the chest to which it is applied, and some 3 yards long.

It is wrung out of cold water (60 degrees F.) and applied to the chest in the shape of a cross, beginning in the left axilla, in front over the right shoulder, down the back obliquely to the left axilla, across the chest in front, under the right arm up to and over the left shoulder obliquely down to the right axilla and across the back and pinned.

Over this is put another such roller dry and outside both a flannel jacket. It may be left on three hours and renewed as it gets dry in that time or it can be left all night. The chest may then be washed in cold water and dried. Folded towels may be used for the roller.

This often proves a great help in relieving cough and dyspnoea and promoting sleep.

Strapping the chest, when the cough is due to the pleurisy is a useful procedure.

Sometimes counter-irritation over the apices or other site of irritation, by painting with tincture of iodine or by applying blisters, providing there is no kidney irritation, are legitmate efforts.

MEDICINES.

It is well to try these various devices before medicine is taken into consideration.

When one does give medicines, they should be as simple as possible, avoiding syrups and vehicles of decided taste that will impair the appetite.

For cough, in which a nervous element is obvious, bromides in 10 to 20 grain doses at rare intervals during the day or on retiring, or chloral in gr. v. doses or a combination in lesser doses of each may be efficacious. If there is much wheezing, and especially if much secretion, Tr. Belladonna in doses of 10 to 20 minims or atropine sulphate gr. 1-100 to gr. 1-50 may be used. These preparations have a beneficial effect on night sweats.

Perhaps the best drug we have to control cough is codeine, a morphine derivative, but one rarely giving rise to habit. However, as we are attacking a chronic condition, the doses must be small at first, gr. 1-12 at as rare intervals as possible, because sooner or later we will be forced to carry these doses up to gr. 1-8 and gr. 1-4 every 2 hours.

Heroin, too, may be used, in slightly lesser doses.

It is not quite as safe.

Finally, as some one has said, "where in a case of Phthisis, we have exhausted the whole materia medica, we have still a resource left in morphine."

It is because it is a last resource, because we know that it must ever be increased, because from a servant it will become a master, that we accept it reluctantly, though gratefully. At first, it should be given by the mouth and, like codeine, sparingly, and then as necessity compels increase and administer it under the skin. Commence with gr. 1-24 of morphine by mouth or gr. 1-16 of some preparation of opium and then increase enough to get results.

Expectoration may be influenced by respiratory exercises, change in position, the cross-binder and such inhalations as have been advised. If the amount is abundant the inhalation of creosote and the use of atropine are the most promising.

HAEMOTYPSIS.

This symptom is said to occur in 60 per cent of all cases. The sputum is only blood streaked in 50 per cent, while 25 per cent of the cases can be called moderate or severe. It is a symptom that is always alarming to the patient and may be alarming to the physician.

It must be remembered that we arrive on the scene more often after the hemorrhage than during it and so have to prevent a recurrence rather than interrupt an active process.

It must be recognized that the cessation of bleeding is rather in nature's hands than ours and our line of action should be in studying what she seeks to do, rather than what we think she ought to do.

The swoon in hemorrhage and the stasis of hemorrhage in the swoon is as old as tradition.

In the swoon, absolute muscular rest is attained, and the blood pressure is low. Science has taught us something about the process of clotting and given us hints as to the facilitating of the coagulation.

It is along this line that we direct our efforts, to secure bodily and mental rest, to keep the blood pressure within certain limits and to encourage clotting.

We find the patient, as a rule, in a condition of perturbation, heightened by the alarm and fruitless bustle of those about him.

One should carry with him calm and assurance, even if he does not feel it. He should explain, if necessary, how common an occurrence it is, how little significance the loss of the blood itself has and how rarely it has serious consequences. The room should be rid of anxious and curious spectators. The well known effect of mental excitement upon vaso-motor action makes this effort at psychic control a very real therapeutic measure.

Bodily rest is next to be sought. The patient should be lifted carefully onto a bed if he is not already in it and place him in the semi-recumbent position as the best to get rid of the collecting blood. If his lesion has been one-sided and we have very good reason to believe we know from which lung it takes its origin, turn him on that side to prevent aspiration into the bronchi of the sound side, for it has been shown that this blood contains the bacilli, and I have seen such a slide as that prepared from the blood of a case of hemorrhage in my practice showing a field of clear red to the naked eye, made of the myriads of stained tubercle bacilli it contained.

One can conceive how readily such blood will disseminate the process. If the breathing is hurried and excited, an ice bag over the chest will be helpful and if placed over the precordium will quiet the heart. The patient should be requested not to talk, bits of cracked ice given him to suck, instructed to cough as little and as little violently as possible and if he is unable to control an excessive cough measures may be taken to assist him. Suppression of the cough entirely is not wise, for the collecting blood is not discharged and may be aspirated.

For slight hemorrhages these measures will answer and we have but to give instructions to preclude recurrence; but if the hemorrhage is large and the mental and bodily excitement is not easy of control, I believe there is but one thing to do to get immediate results and that is to administer morphine under the skin. There is no other drug comparable with it. The well known peace of mind and almost death-like quiet that ensues, the slower pulse and quieter breathing are ideal conditions for the plugging of the bleeding vessel with clot. Give gr. 1-8 or gr. 1-4, which to be determined by the urgency of the condition and the state of unrest. The minimum effectual dose is the best, as a respiration down to 10 and 12 and entire cessation of cough are not desirable, as explained.

Other measures to control an overactive blood circulation or high pressure beside morphine and the ice-bag are ligatures applied to the extremeties, cutting off thus a certain volume of blood from the pulmonary circuit; they may be applied to three extremities at once, releasing one every twenty minutes and applying to another. Absolute stasis in the part is not sought.

As for drugs controlling pressure, some have been advised which diminish it and thus slow the circulation in the affected part, others which contract the vessel coats and thus ligature the vessels, so to speak.

In the light of our scant knowledge of the vaso-motor supply of the lungs, its correlation

with that of the systemic circulation and the effects of drugs upon it, I do not feel that the results will compensate for the risks we run in using them. If any drug is to be used, I would prefer aconite, in case of cardiac over-action, as its effect is almost entirely confined to stimulation of the vagus and slowing of the heart by this means.

COAGULATION.

Whether our measures pursued to increase coagulation-time in this condition have any immediate effect is doubtful, but they may have value in cases of repeated hemorrhage inducing severe anaemia and they are much in use at present.

At the present time calcium salts are frequently used.

One might administer a dose hypodermically at once of gr. x to xv of the lactate of calcium in sterile water, and then order the salt taken by the mouth in solution, gr. xv to xx t. i. d. or gr. xxx morning and night for three days and then omit for two or three days and repeat.

Horse serum is coming into prominence at the present moment as a coagulating agent, given hypodermically in doses of 10 to 20 cc. If this cannot be obtained, an equal bulk of diptheria antitoxin can be used, and remember that it is the serum and not the antitoxin units you desire, a considerable item in expense.

While such efforts to improve coagulation are undoubtedly of benefit in certain conditions, where one or more factors concerned in the clotting are at fault, as in hemophilia, acute lymphatic leucaemia, purpura hemorrhagica, hemorrhage of the new born, cholemia and perchance grave anaemias, I feel that hemorrhages which are traumatic in origin or accidental as in typhoid, ulcer of the stomach and phthisis, in which the blood is presumably normal, can scarcely be controlled by an effort to improve on a normal clotting process.

One must not forget the possibility of anaphylaxis in administering the serum.

It is well to begin with a dose of m x and if no evidences of distress arise in one-half hour we can give the full dose with more assurance.

If the first full dose gives no anaphylatic reaction further daily doses will not, but a second dose following the first after ten days or more may occasion anaphylactic reaction.

I advise against ever administering it to asthmatics. Some of these are sensitized to horse serum, for example those in whom the scent or presence of horses excite an attack of asthma. I have seen an almost fatal issue in such an asthmatic in sixty seconds after the dose.

The picture is that shown by the anaphylactic animal, namely asthmatic breathing. The lungs expanded to the utmost limit, unable to expire the air from the alveoli.

In my case I was obliged to clasp the chest in my arms and squeeze the air out by brute force with each expiratory effort. Atropine in large doses, adrenalin m xv hyp. morphine, cupping and counter-irritation are indicated.

Gelatine also has had a reputation in this field of application, a reputation which I think is waning. Considering the great danger entailed by infection with tetanus, if it is not rendered sterile, it ought not to be used under the skin, but by the mouth. In the shape of jellies, it can do no harm and furnishes at least an agreeable food. Fruit juices from the acids they contain and the potassium salts are said to lessen coagulation and are to be avoided. Of course, if the opportunity affords, the results of these drugs should be studied, by taking the coagulation-time.

Immediately following the hemorrhage, the food should be regulated. It should be liquid, given cold or warm, not hot, lest it stimulate the circulation, given frequently in small quantities, some quart and a half of milk and a half dozen eggs and later semi-solids and then gradually solid food. Stimulating drinks like tea, coffee, cocoa, chocolate, alco-

hol should be interdicted. The amounts of fluid should be somewhat restricted.

The patient should not be allowed out of bed until every trace of blood has disappeared from the sputum and for a few days after. Exercise should then be ordered with care and pulmonary exercise stopped.

In case of an exsanguinating hemorrhage with collapse, the same measures are to be pursued as if occurring from other causes.

NIGHT SWEATS.

There can be no doubt that this distressing symptom, which comes to make the nights dreaded, is seen less often and in less severity since the nutrition and reaction of the skin have been improved by our modern open-air treatment and hygiene of the skin. They occur, however, all too frequently and demand some effort at relief.

The clothes may be drenched through in the night and perhaps several times, so we prefer woolen night clothes that take up the moisture to the cotton night dresses that becomee dank and cold. Too much covering is, however, to be avoided. Hot milk or hot milk with two or three teaspoonsful of whiskey should be given at bed-time and even during the night. A sponge bath on retiring in which may be put with advantage vinegar, an ounce to the pint or stronger one-third or one-half vinegar, gives relief. An alcohol rub, 25 per cent of alcohol, may be tried.

The body should be abundantly dusted with drying powders, of starch and talcum, in which salicylic acid may be incorporated, as this last has been supposed to diminish the amount of sweat. It can be used in starch or talcum or both, in strength of 1 per cent, 2 per cent or three per cent.

Here is one advised: Salicylic acid, 3 parts, starch 10 parts, talcum 87 parts.

The application of the chest compress or the cross-binder, as detailed above, are sometimes efficacious and some patients get relief from the application of an ice-bag to the abdomen for several hours during the evening.

So many drugs have been advised for this symptom that you may be sure that none are particularly efficacious. I will mention the three most promising: Camphoric acid is given in doses of xv, xx or xxx grains in powder form, in cachets or capsules. It is slowly absorbed and should be given an hour before retiring. It does not disturb the stomach and is said by Cushny to act on the sweat glands alone. Aromatic sulphuric acid in one-half dram doses at bed time is an old remedy.

Perhaps the most certain remedy and the one which in the worst cases we have finally to have recourse is atropine or belladonna in some form.

The disagreeable effects induced, when the dose has to be pushed, dryness of the mouth, dilated pupils and erythema, however, lead us to withhold it as long as possible. It may be given in doses of gr. 1-150 to gr. 1-100 at bed time, by mouth or later if necessary by the needle. It may be combined with the camphoric acid.

PAIN.

The pains in tuberculosis, which are pleuritic in character, should be treated as in pleurisy under other conditions by heat, cold, counter-irritation and anodynes.

GASTRO-INTESTINAL DISTURBANCE.

Anorexia is the most common symptom. What devices one may have recourse to, to invite the appetite, have been dwelt upon. The fresh air helps much to overcome anorexia.

When dyspepsia, nausea and vomiting occur, the causes must be investigated and condition relieved in the same way as when occuring without association with tuberculosis.

Diarrhea may occur as the result of indigestion and may be treated as such, or it may be the expression of tubercular involvement of the intestine.

It seems but yesterday, indeed, a scant three lustra age that every man treating pulmonary tuberculosis depended absolutely for his success on the use of three drugs, creosote, cod-liver oil and alcohol.

It seems like the dream of the dark ages, that vision of yesterday, when we saw hundreds of patients with tuberculosis in the clinics and hospital wards of our great cities, sent to their homes with bottles of creosote and stuffed in the wards with cod-liver oil, while intelligent instruction was withheld, because not known, and fresh air denied, because not appreciated. And yet, perchance, a little worthy residue may be recovered from this abandoned practice. Many good men are convinced that patients with much bronchitis and with bronchiectasis do better with creosote than without it; others affirm that the appetite is improved by it. Personally, I prefer to get along without it and fear the disturbance of the stomach that may follow.

So many patients seemed to do well under cod-liver oil that at one time it was looked upon as a specific and much work done to determine what was present in it to lend it such powers for healing. No doubt it did good and does good now, as far as it affords an easily assimilable fat, but better notions of feeding have rendered it less necessary as a food stuff and it certainly never was one that would have graced the table of a sybarite. It is given in emulsion. If given, let it be limited in amount, say one or two ounces a day.

Alcohol in this disease has probably done more harm than good. It may be used in the shape of a cocktail or a half ounce of whiskey before a meal to tease a flagging appetite or a teaspoonful of whiskey or brandy in milk to make it more palatable and perhaps in the slowly advancing chronic processes, it may be utilized more freely for its fuel value.

The many efforts aimed at the prevention and control of this disease, the conduct of educational campaigns, the tremendous assistance of social workers, the establishments of tuberculosis classes, day camps, colonies, sanitoria within and without the cities, the elaborate and effectual organization of an administration that correlates the work of clinics, sanioria, hospitals and other efforts in behalf of the victims of this disease can not be touched upon in so brief a presentation of the Treatment of Tuberculosis. This is the more unfortunate, as after all these are the most effectual means of accomplishing the desired results.

THE TREATMENT OF PULMONARY TUBERCULOSIS BY ARTIFICIAL PNEUMOTHORAX.*

By MARY E. LAPHAM, M.D.,
Highlands Camp Sanatorium,
Highlands, N. C.

In 1905, I read, in the Munchener Medicinishche Wochenschrift, a paper by Forlanini, Professor of Medicine in the University of Pavia, upon the treatment of pulmonary tuberculosis by the injection of nitrogen into the pleural cavity, and mentally applied this method to the cases of tuberculosis then under my care. Instinctively I created many difficulties and dangers, so that the method seemed to me impracticable and unjustifiable. In 1906, in the Deutsche Medicinische Wochenschrift another article appeared; in 1907, still others; and in 1908 an article by Ludwig von Muralt of Davos attracted my attention because this was a name well known to me as carrying authority. In December, 1908, it was my good fortune to talk with some of Dr. von Muralt's patients in the Sanatorium at Davos Dorf, Switzerland, to read their histories, and to see the nitrogen injections given. All my fanciful difficulties and dangers appeared as silly as a child's dream be-

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fore the simplicity and ease of the method. The man came in; took off his coat; pulled up his underclothes; threw himself upon a sofa with the arm well raised above the head; the skin was painted with iodine; frozen with ethyl chloride; the needle inserted; the nitrogen turned on; the needle withdrawn; the puncture sealed with collodion and the dreadfully difficult, dangerous, and painful attempt of my imagining was over. The man dressed and went on his way and I sat down to think over what had happened. Here was a man looking well, acting well, feeling well, going about his business even as other men. It was almost impossible to believe that a few short months before this man had been at death's door. Today he was well enough and strong enough to work—then he was in bed, almost too weak to stand, terribly emaciated, with high fever (39 or more), drenching night sweats and profuse, purulent expectoration. What had wrought this change? How could nitrogen in the pleural cavity accomplish this?

In Davos the air was full of the possibilities of this new method invented by Forlanini and supported by Brauer, formerly of Marburg, now head of the great Eppendorfer Institute at Hamburg, perhaps the most commanding post in all medicine. His comprehending genius grasped the value of the new method and the laboratories of the University of Marburg and the skilled specialists of Davos were soon co-operating with him to establish its value. Forlanini and a few obscure men in Italy could never have placed the method where it stands today without the brilliant assistance of Brauer of Marburg and his laboratory workers, together with Lucius Spengler, Ludwig von Muralt, Frey, Phillippi and others of Davos, Saugman of Vjelfjord, Holmgren of Sweden, Dumarest of France, etc. After reading everything I could get on the subject I came back from Europe in the spring of 1909 full of enthusiasm and eager to give my patients the advantages of its aid. An opportunity soon presented itself; a case of complete infiltration of the left lung and inability to recover under symptomatic and tuberculin treatment. I suggested compressing the lung, but the home physician said it was too dangerous—would never do—that even Murphy had given it up. This threw a new light upon the inexplicable reluctance of the profession in the United States to even consider the matter. If Murphy would have none of his own method, who would? Murphy's scientific imagination had independently conceived the same idea as Forlanini and, in 1898, he published his theory and a report of five cases in the J. A. M. A. Having demonstrated his theory, Murphy persistently refused to use it—refusing hundreds of applicants because he did not wish to leave Surgery for Medicine. It would have been far better for the future of tuberculosis in the United States if Murphy had never thought of compressing the lung, because the Profession has unanimously inferred that he gave up the method because it was too dangerous. This is as untrue as it is silly, for Murphy still believes that the method has more scientific and practical value than anything that has ever been devised for the treatment of tuberculosis.

In April, 1910, Murphy performed the operation for me, at the Mercy Hospital in Chicago, upon a case that had been under my care for nine months; a young girl of eighteen with repeated hemorrhages and an inability to arrest the progress of the disease. She had an exasperating, paroxysmal cough followed by vomiting, and the sputum was full of tubercle bacilli. In two months cough and sputum and bacilli had all disappeared.

In August, 1910, Dr. S. T. Harris, of Valdosta, Ga., came to Highlands to investigate the possibilities of the new method and became as enthusiastic as myself over its value. I felt that I had gained a staunch adherent to the cause. It was the greatest pleasure to discuss with him the various advantages of the different ways of applying the method peculiar to Forlanini, Murphy, Brauer, and Saug-

man and to initiate, with him, the establishment of an artificial pneumothorax upon three cases then under my care, that happened to be well suited to the method. These three cases are all doing well today and will be reported later, together with twenty-one more cases subsequently undertaken. As soon as sufficient time has elapsed to confirm the results I shall publish a comparative study of these twenty-four cases.

Upon what does the value of the method depend? Upon pressure, persistently and evenly applied to all the surface of the lung so that it is crowded up together into the smallest possible mass. As the infiltrated lung yields to this pressure, all liquifying, decomposing masses are crowded out; all cavities and bronchiectatic areas are emptied and drained of their foul contents. The lung becomes clean, firm and dry and no traces of tubercular processes can be discovered, for their lesions have all been crushed out and converted into sound scars by the overgrowth of connective tissue.

When a physician has a case of tuberculosis that cannot be cured by symptomatic and tuberculin treatment, what is to be done? After all the help that climate, food, rest in fresh air, skilled attendance, best of nursing, and tuberculin treatment can give have been tried, what shall we do if the patient is unable to fight it out? Hitherto the inevitable has had to happen. Today, we can come actively to the assistance of the patient and by a bold, determined effort turn defeat into victory. The relation of patient and physician is changed to that of patient and surgeon, and slowly, gradually, and with almost as little co-operation on the part of the patient as in a surgical case, the lung is compressed; the fever, the sweats, the cough, the expectoration and the tubercle bacilli disappear, and the patient turns from the grave back to health and strength. Is this a dangerous or difficult procedure? Not in the least. It may be carried out almost without the consciousness of the patient, and, in some cases, without the necessity of stopping work. Forlanini reports the case of a cook with a badly infiltrated lung. Aside from the nitrogen injections nothing was done for her. The patient continued to cook under the most unhygienic conditions, in the bad air of a close, dark Italian kitchen and with poor food and no rest, made a good recovery.

A Literature List of three hundred references in Brauer's "Beitrage zur Tuberkulose" Band XIV, Heft 4, shows the importance this subject is attaining abroad and this paper has been written with the hope that the physicians of the South will appreciate the importance and investigate the value of a method based upon the most scientific principles and today yielding brilliant results abroad, while universally neglected in the United States.

It is very evident that the man who proposes a new procedure incurs a responsibility. It is impossible for him to avoid doing so. But what of the man who refuses to investigate a life-saving method because it is too radical? If lives, under his care, are lost because of his unwillingness to examine the merits of a method, is his responsibility not equally great? Can he in any event avoid responsibility? Is not the safest way that of full information? And if the Leaders in the South blindly influence their followers, is not this a responsibility also?

INTESTINAL WORMS IN THE EXAMINATION OF ONE HUNDRED AND TWENTY-TWO CHILDREN.*

By NEWTON EVANS, M.D.,
Professor of Pathology, Medical Department of University of Nashville and University of Tennessee, Nashville, Tenn.

This study was undertaken primarily to determine the incidence of infection with uncinaria americana (the American hookworm) among children in the State of Tennessee. The material used for the study comprised inmates of several of the public institutions containing children coming from different parts of the State. Thirteen of the children were confined at the county detention hospital and were suffering from pellagra. Thirty-five were children at the Tennessee Industrial School, and seventy-four were students at the Tennessee School for the Blind. The ages varied from seven to twenty-one. Upon compiling the results of the fecal examination in these one hundred and twenty-two children I was surprised to find that at least sixty harbored intestinal worms of some kind, and many of them two varieties, and that two of the children had three varieties of parasites at the same time. In all probability some cases were missed, particularly the oxyuris or pin worm, as it is often difficult to find the ova of this worm by fecal examination even when worms are present.

In the majority of these cases the only means of diagnosis was the microscopic examination of the fecal discharges for the ova.

It is evident from a brief search for American literature upon this subject of intestinal worms that the matter has not been studied by many men, and that it has not been regarded as an important cause of disease. It furthermore is apparent that in the majority of the cases in which these worms are present they do not produce serious symptoms and do not call for study and diagnosis. But a priori it would seem that certainly this form of parasitism is not an ideal condition, and the harboring of these infesting organisms must have some deleterious influence, even though in a majority of cases it may be infinitesimal. On the other hand, many cases are reported in which the parasites were unquestionably the cause of very serious symptoms, particularly nervous and grastro-intestinal symptoms and anemia.

In my study there were five varieties of worms found in these one hundred and twenty-two examinations, as follows:

1. Uncinaria americana (American hookworm). This was seen thirty-nine times, or about as many times as all the other parasites combined. I shall not take time here to describe this organism and its symptoms, as I have already considered that subject upon another occasion. It suffices to say that its mode of entering the body is probably in all cases through the skin, by the lesion called ground itch. Its principal habitat is the jejunum, but it may be seen in other parts of the gastro-intestinal tract. It does not increase in the intestines, but each infesting organism enters the body as a separate larva. It may be present in great numbers, as high as five thousand or more. Its eggs are very characteristic in appearance, as in fact those of all the intestinal worms are. The egg measures thirty-five to forty by sixty-five to seventy mikrons. It has a perfectly clear capsule or shell and the granular protoplasm is seen in different stages of development. The usual treatment is thymol, and beta-napththol is also successfully used.

2. Ascaris lumbricoides. This common parasite of children was second in order of frequency in our list. It is commonly called the round worm or eel worm. This is a large

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worm, the female sometimes reaching fifteen inches in length and the male varies up to ten inches. It inhabits principally the small intestine, but may be found in any portion of the alimentary tract. We are all familiar with the accounts of the wandering of these large worms into the upper digestive canal and appearing in the throat, particularly during the administration of general anesthetics to children. The usual manner of infection is by the ingestion of the ova, and it is probable that the freshly laid eggs may develop in the same intestinal cavity without the necessity of an intermediate host or for development in the outside world. It is also possible that in many instances the eggs may develop externally under proper conditions and be swallowed as small worms. It frequently produces symptoms, especially nervous and gastro-intestinal, and in cases jaundice from mechanical obstruction of the biliary passages.

In common with most of the other forms of helminthiasis the eosinophils of the blood are increased and the examination of the blood gives an important clue to the presence of the intestinal parasites. But as in the case of the other worms this eosinophilia is only present during the periods when the presence of the parasite is producing active symptoms. Apparently in many cases the tissues of the host become immune and do not react to the presence of the parasite by manifesting symptoms.

The most effective treatment in use is santonin. After one month's time following the administration of this anthelmintic the feces should again be examined for ova, as in that length of time it is possible for the full development of the female from the egg. The eggs are easily recognized. They are about the same size as the uncinaria eggs, a longer oval in shape, and are covered by a brown-colored rough chitinous outer capsule which is sometimes absent. In some cases this worm may be present in such numbers as to cause serious mechanical obstruction of the intestines.

3. The trichocephalus dispar (or whip worm). In order of frequency in our cases this parasite follows the round worm, but in most statistics it is given as the most frequent intestinal parasite. It is a very slender thread-like worm, the female reaching two inches in length and the male being slightly smaller. It is of peculiar shape. The caudal one-third or one-half is much larger in diameter than the cephalic end and contains the reproductive organs. In the male this caudal end is curved or curled upon itself, while in the female it is straight. The mode of infection is probably by swallowing the eggs. I can find no evidence that this worm multiplies in the body of the host. Its location is in the cecum. It is said to burrow its head into the mucosa and thus resembles the uncinaria. This fact is borne out by the fact that these infections are accompanied by bloody stools as in uncinariasis. It often produces very definite and serious symptoms. Besides the gastro-intestinal and the nervous symptoms there is severe anemia and death has been reported from its effects. Occult blood is found in the feces and blood may be seen within the intestinal tract of the worm.

The absence of an increase of the eosinophils in the blood of these cases is noted as a peculiarity, since in practically all of the other intestinal parasites, at least during the time when the symptoms are present, eosinophilia is a pre-eminent symptom. Some observers, however, do report eosinophilia in this disease.

The egg of this worm has a very peculiar and a characteristic appearance. It averages 23x52 mikrons. It is brown in color, has certain characteristic markings when observed by the microscope, and at either end there is a very distinct knob-like projection.

b. Taenia nana or hymenolepis nana (the dwarf tapeworm). This is the only one of the five parasites found in our series which does not belong to the nematodes, being a tapeworm. It is a very small and slender worm,

less than 20 mm. or about one-fifth of an inch in length, and is composed of from 100 to 200 very minute segments, and of course is hermaphroditic, as all the tapeworms are. Its head is armed with four sucking discs and a row of hooklets. I was surprised to find a statement in Simon's clinical diagnosis, the edition of 1902, that this worm was unknown in this country. In fact it was only in 1903 that Dr. Stiles (1) first demonstrated that it is a rather common parasite in the United States.

Its habitat is the small intestine, particularly the ileum, and as many as 5,000 have been observed in one case. As with the other and larger tapeworms, it has an intermediate host, the rat; but in all probability its transmission is not dependent upon the cysticercus stage in the flesh of the rat, but it may develop in the intestine directly from the egg or may be transmitted by means of the egg to a second human host.

This parasite frequently produces symptoms. In Schloss' (2) series, twelve out of twenty cases showed symptoms. Eosinophilia seems to be a constant finding in this infection. The egg as in the other worm is easily recognized. It is smaller than the eggs described of the other parasites previously mentioned, and more nearly spherical in shape. It has a double capsule in which are seen two filamentous projections, one at either extremity of the protoplasm. In each egg six hooklets can always be seen in the protoplasm.

The most successful drug for the removal of this worm is oleoresin of male fern given in doses of ½ to 1 drachm for a child. Thorough catharis should be produced before and after the administration of the drug.

5. Oxyuris vermicularis (pin worm or seat worm). The female of this worm is about 10 mm. or one-third of an inch long. The male is smaller and has a blunt caudal extremity. Its abode is the cecum and often in the lumen of the appendix. Still reported that in twenty-five out of twenty-eight cases the worms were found in the appendix, and in six of these cases in the appendix only. It is not found in the colon or the rectum except that the female, while depositing eggs, migrates to the anal and vulvar regions, producing the severe pruritis, which is such a marked symptom of this infection. The eggs may often be overlooked in the microscopic examination of the feces unless a cathartic has been administered or the mucous lining of the rectum be scraped to obtain the eggs. The eggs develop in the rectum and other moist places and are transmitted by the ingestion of eggs, probably. The symptoms of the pin worm infection are genital and rectal pruritis, masturbation, diarrhoea, blood and mucous in the stools, chorea, grinding of teeth and restless sleep, and appendicitis.

Treatment consists of three different procedures; first, calomel and santonin should be given to reach those worms in the cecum; second, infusions of quassia should be used as enemas, and, third, mercurial ointment should be applied externally to prevent reinfection and transference to others.

In 1906 Stiles and Garrison (3) published an exhaustive statistical study of the occurrence of intestinal worms in man, including the report of the examination of about 3,500 persons observed by themselves. About 10 per cent of these (349) harbored intestinal worms, including two varieties not described in the present study, namely the strongyloides intestinalis (Cochin China worms) and the beef tapeworm. Evidently the pork tapeworm cannot be very frequent in this country judging from these figures of Stiles and Garrison. The most frequent variety in his cases was the whip worm, and the pin worm came second in order of frequency. In our cases the uncinaria stood first, the ascaris second, and the whip worm third in order of frequency.

Stiles' statistics show that females have a higher per cent of infection than males. Our figures do not agree with this, as of the forty-six females examined, 52 per cent had intestinal worms, while of the seventy-six males,

72 per cent were infected. This usual predominance of infection in females is probably correctly explained by the fact that women are more exposed to the sources of infection, being at home in the house and about the premises in close contact with the infected soils for a much greater portion of the time than men. If, however, the comparison is made between the two sexes in childhood when this difference in manner of life does not exist there is then no greater per cent of infection in females than in males.

That children are more frequently infected than adults is plainly shown by the figures of Stiles and Garrison, from which it is seen that there is a gradual and decided decrease of frequency of infection in each age group, in the case of each parasite with the exception of two. These two are the strongyloides intestinalis and the beef tapewrom. In these two there is gradual increase in incidence as the age advances. In our cases we had neither of these worms.

That these common parasites of children are not frequently found in adults and particularly in the adults of the better classes is strikingly shown by comparing the results of the examination by myself of seventy-five men, medical students, in whom there was, by the way, a very large percentage of hook worm infection, but who showed an entire absence of any other intestinal parasite except that in one case only was there an infection with the dwarf tapeworm.

As above mentioned, of the 122 children examined, 60 had intestinal parasites. This, however, does not represent the total infection, for many of the children harbored more than one kind of worm. There were 79 infections in all in the 60 children, 17 children having two varieties and two children having three kinds of worms each. The three varieties were the same in each of these two cases, namely, uncinaria, ascaris lumbricoides, and tricocephalus dispar. In Stiles and Garrison's 349 cases of intestinal parasitism there was one case harboring three varieties, and they were the same three which we found in our cases just mentioned.

It is interesting to note that Schloss recently reported the finding of intestinal parasites in about 28 per cent of several hundred children examined in New York City. Comparing this number of infected cases with our findings we see that leaving out of the computation all of the cases of hook worm infection, which occur so frequently here in the South, but do not appear in New York City, we have in our list 44 per cent of infected children with the other forms of intestinal parasites.

So far as I have been able to ascertain, none of the children with the intestinal parasites in our list had any definite symptoms of disease resulting from their presence with the exception of some of the cases of hook worm disease.

If there are any important lessons to be learned from the results of this examination of children it seems to me that the two most important are, first, the necessity of teaching in season and out of season, and particularly in the public schools, the importance of personal cleanliness and personal hygiene, and especially is it important to show to the people living in the country districts the necessity of providing for adequate and safe disposal of all human excrement; second, it is the physician's duty to make a more careful and complete examination of his patients, this to include a microscopic examination of the fecal matter, and if parasites are present, to see that the patient is relieved of his infection. I believe this is of a special importance to public institutions and that all children in these institutions should be examined and the parasites destroyed, both for the sake of the child himself and to prevent the further spread of the disease.

1. New York Med. Journal, 1903, LXXVIII, p. 877.
2. Amer. Jour. of the Med. Sciences, Vol. CXXXIX, p. 675.
3. Bulletin of the Hygienic Laboratory of the Public Health and Marine Hospital Service, No. 28.

DELAYED RESOLUTION IN PNEUMONIA.*

By J. C. McLEOD, M.D.,
Bay Minette, Ala.

Resolution in pneumonia has been defined as the digestion of the exudate in the air cells by a ferment present in the lung during the stage of gray hepatization, followed by its absorption and excretion by the kidneys.

It seems that it is not known precisely what the conditions are upon which rapidity or slowness of resolution depend. One observer is of the opinion that delayed resolution is due to a continuation of the exudate into the air cells. Strumpell says that in this condition we have to do with a genuine secondary disease or mixed infection in the lung, for the development of which the croupous pneumonia had prepared a suitable soil.

Certain epidemics of pneumonia exhibit a tendency to delayed resolution. It has fallen to my lot within the past two years to have had under my care quite a number of these cases.

We know that in the vast majority of cases of pneumonia the disease runs a short course and when we make a diagnosis the anxiety we naturally feel for our patient in the throes of this dangerous malady is in part offset by the consolation which we have of realizing that if we can tide over the case for a few days the enemy will quit the field and leave the patient to rapidly regain his usual health and strength. But, unfortunately, things do not always run so smoothly. Even if the patient does not succumb, the course of the infection is not always so brief and gratifying. We anxiously look forward to the night of the fifth, seventh and ninth day (for it is a fact that the crisis generally comes on odd days and usually takes place at night) but the patient sometimes fails to show the abrupt betterment of symptoms or the gradual return to normal which is called lysis. It is true that the symptoms become less urgent and the extreme distress and discomfort often observed are somewhat abated, but the pulse remains quick, and the fever, though lower, persists. The dullness on percussion is unchanged, palpation shows continuance of increased vocal fremitus and on auscultation we still find all the symptoms of lung consolidation—bronchial breathing, bronchophony and whispering pectoriloquy.

The patient, if rational, and the relatives, if of average intelligence, have learned to believe that a case of pneumonia will get well in a week or ten days, and when, instead of doing so, his symptoms persist, as stated above, they, as well as the physician, are keenly disappointed and are inclined to ply the latter with questions and to look to him to explain the failure of the case to follow the usual course. Then it is that it becomes necessary for the medical attendant to diagnose the condition.

There are several conditions he must keep in mind. The three most important are: (1) extension of the disease to the other lung or to an unaffected lobe of the same lung, (2) pleurisy with effusion which may be serofibrinous or purulent, circumscribed or general, and (3) tuberculosis. If the delayed recovery is attributable to an extension of the pneumonia there will be no abatement of the symptoms, and if the other lung becomes involved, the pain will appear on the hitherto sound side, and on examination we will discover the physical signs of pneumonia over areas that had not been affected. We should search very carefully for evidences of purulent pleurisy and should bear in mind that empyema is sometimes circumscribed. If we have any doubts as to the presence or absence of pus in the pleural cavity we should employ the aspirating needle and be sure that the needle is not too small. In cases of this kind the physician is very naturally exercised and is fearful that tuberculosis may supervene. The best way to settle this point is to bring

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the microscope into play and make several examinations of the sputum.

In the past two years I have seen about six cases of delayed resolution. I will only report two of these, both of which present unusually interesting features. One of them is without parallel in point of duration in my experience, in the experience of the authors of the text books which I have consulted, and in that of every physician to whom I have related the case. Case No. 1, C. H. S., white, male, age 35, occupation, farmer. Was taken on the night of February 23, 1909, after being exposed to cold the two previous days at Mardi Gras. The initial chill was absent. The next morning when I first saw him he complained of aching all over, temperature 102½, pulse 96. His mind was clear and he did not appear to be very ill. The breathing was not accelerated, there were very slight cough and for the first two or three days the physical signs were negative, though I examined his chest carefully. There were no symptoms of pneumonia except a moderate pain under the right nipple. He continued to have about the same temperature and pulse. On the third day I found him sitting in a chair, engaged in a business conversation. At this visit I observed that his respiration was quickened. I made another close physical examination, made a diagnosis of pneumonia in the right lung and ordered him back to bed.

The disease ran a very satisfactory course for the next few days. No urgent or alarming symptoms occurred, but at the time it was expected the crisis did not take place, nor did the case recover by lysis. The temperature came down a degree or two but did not reach normal. The cough did not abate. There was extreme dullness on percussion, and bronchial breathing, and rales could still be heard over the whole of the back part of the right lung. There was no tendency toward resolution. The lung was still solid and remained so for sixteen long weary weeks. Dilligent search was made for pus collections about the pleural cavity and several specimens of sputum were examined microscopically, but with negative results. The left lung remained free of the disease during the entire illness. About the middle of the month of June, sixteen weeks after he was taken ill, the evening temperature reached normal and the patient entered upon his convalescence. He returned to his duties soon after and has ever since been in robust health and able to perform arduous labor. Case No. 2, R. L. L., white, male, age 27, occupation, hewing crossties. Previous health good but was extremely kyphotic from birth. Was seized with a chill during the day of February 22, 1910; temperature 106, pulse 140, respiration 50. Nervous symptoms were marked; patient in a wild delirium. The symptoms were characteristic and the diagnosis was easily made. After the physical signs were developed, I found I had to deal with a case of double pneumonia. The three lobes of the right lung were almost entirely involved and the left lung was affected to a lesser extent. The patient being a hunchback to an extreme degree, and both lungs being affected, the dyspnoea became most distressing. The respiration was rapid, the skin cyanotic, the pulse frequent and small, and the delirium and restlessness pronounced. It was only after the free use of morphia and chloral that the patient had the least bit of rest. The case presented a very unfavorable picture, and I decided he had a very slim chance to recover. The treatment was kept up. He held his ground until the seventh day, when he showed marked improvement. The temperature fell to 99½, but did not reach normal as it does after a true crisis. The respiration and pulse came down and his mind became considerably clearer. I was congratulating myself on the favorable turn the case had taken and the prospects of being able to discharge him at an early date, but the end was not destined to be reached so quickly. The temperature and pulse rate went slightly upward again, the cough persisted and instead of finding that the affected parts of the lungs were clearing up, the physi-

cal examination showed a continuation of all symptoms of consolidation. The left lung, which was least affected, promptly returned to normal, but there was extreme dullness over the whole of the back, and the side and a part of the front of the right lung. Weeks passed and conditions remained the same. The aspirating needle was used several times. Once a consulting physician expressed the opinion that the pleural cavity contained pus, but the aspirator failed to reveal it, and the subsequent history disproved it.

In the latter part of May, eight weeks after he took sick, the evening temperature reached and remained at the normal point. Vesicular breath sounds were again audible on auscultation, the percussion note became less dull and the cough subsided. He slowly convalesced and is now as strong and healthy as ever, and is able to perform heavy manual labor.

As I remarked above, the first case is unique in point of duration so far as I have been able to learn. Osler mentions a case of his which lasted eleven weeks and recovered, which is five weeks shorter than the duration of case No. 1.

The second case was interesting, not so much because of the duration (eight weeks) as because of the extreme posterior curvature of the spine. This condition is mentioned in medical literature as predisposing to delayed resolution, and doubtless it contributed greatly to my patient's distress and interfered with the clearing up of the exudate.

Regarding prognosis, my experience leads me to say this: if one can feel sure of his diagnosis, his patient has a good heart and will take and digest fair quantities of milk, one may with some degree of confidence give a favorable forecast of the result.

I have tried the remedies recommended for this condition, but cannot say that any of them have proved valuable. I have concluded that no drug of which we know will shorten its course. I believe it is best for us to take the view that it is a question of the patient's ability to hold out against the disease until it has had time to do its worst and release the sufferer from its grasp. Fortify the individual's strength and power of resistance. If, in the judgment of the physician, stimulation is needed in this protracted condition, let him use them, but do not permit the nourishment to be neglected. Milk has been my chief dependence as a food in these cases. It has generally been a task to get the patient to persevere in taking the necessary amount of nourishment, but my persistence in impressing upon them its great importance has usually been rewarded by good results in the end.

I desire to speak a word against the free use of drugs, especially powerful ones, in a condition like this. They accomplish nothing good for the patient, and if they are not very simple, indeed, they may be decidedly injurious. In my opinion it requires as much judgment for the physician to avoid giving his patient harmful and unnecessary remedies as it does to decide what will be good for him. We should remember that we are under as great obligation not to harm our patient as we are to aid him.

STIFFNESS OF THE SPINE.

By THEODORE TOEPEL, M.D.,
Atlanta, Ga.

It is, I presume, hardly necessary to say that symptoms are not always in proportion to the gravity of the disease by which they are caused, since it is common knowledge that grave disease may exist without noticeable symptoms, and distressing symptoms may be associated with comparatively trivial complaints. It would be difficult to find a better

illustration of this fact than that provided by certain cases of rigidity of the spinal column, a condition which, on the one hand, may be a symptom of the greatest moment, and on the other hand may be of no real importance at all, provided that an accurate diagnosis of its causation be arrived at.

The cases included in the following table, which represents only some examples, and is not intended to be a complete list, will show how large a field the question of rigidity of the spine covers, and how many factors are concerned in its production, more, I fancy, than are ordinarily realized:

TABLE OF CAUSES OF STIFFNESS OF THE SPINE WITHOUT VISIBLE DEFORMITY, AND EXCLUSIVE OF ACUTE CONDITIONS.

PERSISTENT.....		Tuberculous Disease
		Osteo-arthritis
		Spontaneous Ankylosis (Sepsis)
		Malignant Disease
		Aneurysm
		Old Fracture
		Traumatic Myositis Ossificans
		Congenital peculiarity
		Senile rigidity
		Neurosis. N. B., *Neuro-mimesis*
INTERMITTENT OR RELAPSING...		Chronic Rheumatism, Muscular and Fibrous
	REFLEX.	Worms
		Movable Kidney
		Renal Calculus
		Stone in Ureter
		Prostatis
		Hip Disease
TEMPORARY OR TRANSIENT...		Early Tuberculosis
		Gumma
		Sprains and Wrenches
		Rickets

NOTE—The lines in italics refer to the less commonly recognized causes of stiffness of the spine, and are those toward which the remarks in this paper are mainly directed.

The whole subject is, as can readily be seen, a large one. All that I propose now is to call attention to certain broad features in some of the varieties of spinal stiffness, with a view especially to combat an impression which seems to be far too prevalent, that anything like pronounced rigidity of the spine, in the absence of congenital and acquired deformity, is a strong indication of tuberculous disease—an impression which I have reason to know too often leads to faulty treatment.

Distribution of the Rigidity.—This may involve the whole length of the spine or may be confined to limited areas, as the lumbar, dorsal, or cervical regions separately; or in rare cases two distinct areas, as the cervical and dorso-lumbar, may be involved, the intervening parts of the vertebral column retaining their suppleness.

The Characteristics of Stiffness.—(1) The stiffness may be absolute, that is to say, the spine or the portion of it involved may be rigid like a bar of iron, even when the patient is anesthetised. (2) The stiffness may be "sub-absolute"; that is to say, complete in ordinary circumstances, but disappearing under the influence of an anesthetic, the rigidity recurring upon the recovery from the anesthesia. (3) The stiffness, although at first apparently absolute, becomes upon proper examination modified, with the result that the spine begins to give in a succession of jerks in consequence of the stammering of the muscles—a condition which is known as the "stammering spine." (4) The stiffness may be, as indicated in the table, persistent, intermittent or relapsing, and temporary or transient.

Absolute Rigidity.—This may be divided into two varieties, that which is unaffected by the administration of an anesthetic and that which disappears under anesthesia. These cases may again be considered under two heads—those occurring during adolescence and under the age of twenty-five, and those occurring later in life. In the former, if the rigidity persists under anesthesia, the cause is probably either tuberculous disease or congenital peculiarity.

In tuberculosis other symptoms are generally sufficient to settle the question, but it is a mistake to suppose that the rigidity of tuberculosis is always associated with pain or tenderness, as sometimes both symptoms are

wanting. It is somewhat surprising that congenital stiffness of the spine, affecting almost invariably the lumbar or dorso-lumbar region, is so little recognized, as it is not altogether rare; the importance of a proper estimate of it is obvious. In the absolute stiffness of old people, osteo-arthritis or spontaneous ossification may, in the absence of other distinct indications, be assumed to be the cause, due allowance, of course, being made for the rigidity being possibly due to cured conditions (e. g. tubercle) in early life.

In the intermediate period between adolescence and old age a variety of causes such as those enumerated in the table may account for the condition, and the clinical symptoms are generally sufficient to prevent any mistake in the diagnosis. The revelation of the X-rays in injury to the cervical spine makes it clear that the fracture of the spine, principally affecting the laminae, but sometimes involving the bodies, ending in recovery, is more common than has hitherto been supposed, and that such cases are followed by stiffness, which varies, of course, according to the severity and distribution of the injury.

The Stammering Spine.—There is a form of persistent rigidity which, although only apparent, is at first sight so absolute that unless an examination of the right kind be made, errors in diagnosis are more than probable. This form of rigidity is due to muscular rheumatism, hysteria, neuro-mimesis, and a consequence of reflex irritation, and so complete sometimes is the fixation of the vertebrae that a condition of absolute rigidity is produced.

Excepting cases of inflammation, congenital abnormality, or central nervous disease, it will be found that when stiffness of a joint, vertebral, or otherwise, is due to muscular spasm, relaxation of the muscles concerned for a longer or shorter period is merely a question of putting strain upon them for a sufficiently long time. The relaxation may be only momentary, but it will come, and however short the term of relaxation may be, it is sufficient to provide the key to the situation.

The administration of an anaesthetic would at once settle the question of the relation of muscular spasm to the rigidity, but it is not commended, because it often veils for the time being other symptoms of importance. In the examination it is necessary that the patient, stripped to the hips, bend trunk forward, keeping the knees straight, the hand of the examiner resting upon the rigid portion of the spine. The patient should maintain the bent position for a considerable period. It will then be found that if the rigidity is due to muscular action, a slight quivering of the muscles lying under the hand of the examiner will occur; this quiver will, if the bent position be still maintained, be replaced by a series of jerks (stammering) until in some cases the flexibility of the vertebral column can be freely established. In infants and the very young this method is impracticable, but in such the same results are attained by placing the small patient flat on the back and lifting it off the couch or bed by one hand placed beneath the spine; when held up in this way for a minute or so, if the rigidity is due to muscular causes, the result mentioned will follow.

Intermittent or Relapsing Stiffness.—Neuro-mimesis, the nervous mimicry of disease. Occasionally it happens that an unusually susceptible child, thrown constantly in contact with another individual, whether child or adult, suffering from some deformitory or peculiarity will unconsciously imitate the peculiar characteristics in a remarkable way. The commonest conditions thus imitated are disease of the hip and Pott's disease. The recognition of these cases is of considerable importance, for unless proper means are taken to correct the perverted function the abnormality may become permanent.

Reflex Irritation as a Cause of Intermittent Spinal Rigidity.—The reflex disturbances re-

suling from intestinal worms in children are so manifold as to be almost unlimited. At the same time I do not know that occasional spinal rigidity is generally recognized as one of them. There is no doubt, however, that intestinal worms do produce this complication, and sometimes in a very alarming degree.

Renal Calculus.—Spinal rigidity, generally of the relapsing type, is met with in cases of renal calculus.

A stone in the ureter may also be the cause of temporary spinal rigidity; the pain is intense and usually located in the lumbar region, where, too, the rigidity is found.

Temporary or Transient Rigidity.—It is evident that transient rigidity may arise from several conditions affecting the vertebral column apart from those the result of reflex causes. The only cause which I need mention here is rickets. The general belief that the rickety spine is a supple spine is universally taught, and rightly so, but it is nevertheless a fact that during the gastro-intestinal disturbances in rickets the spine may for a period be rigid.

In conclusion, it may not be amiss to remind you that while on the one hand spinal rigidity is not, necesarily, an indication of disease of the vertebral column, its absence, on the other hand, does not prove that the column is free from lesion, since, in some cases of tubercle considerable changes in the condition of the column may occur without its suppleness being interfered with.

COMPLETE AND PERMANENT REMOVAL OF SEPTAL SPURS.*

By ALBERT B. MASON, M.D.,
Assistant to Chair of Clinical Diseases Eye, Ear, Nose and Throat, Atlanta College of Physicians and Surgeons.
Atlanta, Ga.

The location of septal spurs is fairly constant, being situated on the anterior two-thirds of the cartilaginous septum, on a line running from the anterior nasal spine backward and upward to the sphenoidal sinus. Less frequently they are found on the bony septum.

According to Freer, true spurs arising from a straight septum are more infrequent than is generally supposed. His experience has been that the spur is, in most cases, really the summit of an evenly hollowed deflection, and not a solid projection. As to their frequency, they occur after puberty, more in the male than the female. They are more frequent in the white race, rarely occurring in the negro, and those in the negro are usually on the bony septum. Bryant Sheedy (discussing C. E. Purcell's paper on the "Sub-mucous Resection of the Nasal Septum," J. A. M. A., October 22, 1910) attributes this absence of spurs and deviations in the negro to the fact that the negro does not have adenoids, claiming, as does Pynchon, that mouth breathing, caused by adenoids, is the principle cause of deviations and spurs. It has been my experince that adenoids in the negro, instead of being rare, are quite common. It would seem, then, that adenoids have little to do with spurs.

Not every spur needs surgical intervention. Only those that are large enough of themselves to cause nasal obstruction, and those that, by reason of pressure on normal or enlarged turbinates, or by interfering with drainage of the sinuses, cause headaches and neuralgia, need be removed. When there are enlarged turbinates existing in connection with a spur, I think it best to give the spur our attention and not the turbinates. I have seen enlarged turbinates diminish in size after the removal of spurs that were pressing against

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them, and I have seen atrophic condition resulting from the removal of turbinates. Especially is this liable to occur in the negro. Small spurs well forward at the entrance to the nostrils, on account of the small caliber of the nasal passage, cause more trouble than one of the same size located further back, and should be removed. Owing to the mobility of the ala, inspiration is difficult.

I believe there is too little nasal surgery done. We are too apt to content ourselves with spraying and mopping obstructed nares with astringents. I am confident that in chronic otitis media, with limited breathing space, a closer attention to the nasal passages, removing spurs and correcting deflected septa, would prove of benefit.

The operations for the removal of septal spurs may be classed as (1) the sawing operation, (2) the modified sub-mucous resection, and (3) the sub-mucous resection.

Until recent years all spurs were removed by the saw. The objections to this method are, first, it destroys mucous membrane, and, second, it does not always permanently remove the spur. It should be our aim in all nose surgery to leave mucous membrane intact as far as possible, not only to preserve functionating tissue, but to avoid the formation of a large scar, with resulting dried secretions. Then, too, unless an operator is unsually fortunate, he will have recurrences. The spur is formed by the displacement of bone on cartilage, or cartilage on bone. So, if the spur is not removed entirely, if its base is not removed, new tissues form, and in the course of a few months what seemed at first to be a successful operation, results in a failure. J. C. Beck, of Chicago, has demonstrated the formation of new tissue from the embryo-logic structures present in histological specimens of spurs and ridges removed by the sub-mucous route.

In the modified sub-mucous variety of operations a vertical incision is made in front of the spur, and the perichondrium elevated. The spur is then removed by one of the following methods: It is chiseled off with a flat, or V-shaped chisel, shaved off with a spoke shave, worn away with a small dental burr, or bitten off with a pair of biting forceps. There is one objection to all these that ruins their usefulness, and that is the possibility of recurrences, for, as already stated, merely removing the projections and leaving the base does not remove the spur permanently.

The one operation for complete and permanent removal of septal spurs is the sub-mucous resection of that part of the septum involved. The sub-mucous resection for the removal of spurs differs very little from the sub-mucous resection for deviations.

The nose having been cleansed with a mild alkaline spray, preferably Dobell's solution, is plugged with pledgets of cotton saturated with 1-1000 Adrenalin chloride. This is applied in both nostrils. After a couple of minutes 10 per cent solution of alypin is used in the same way. At the end of five minutes the spur is rubbed with 10 per cent alypin on a cotton applicator. The patient's head should be inclined forward while the alypin is being applied to prevent trickling down the throat. For the operation, the patient should be in a half reclining position, not only to facilitate the removal of spurs high up, but to avoid spells of dizziness and nausea so frequently seen when the patient is in the upright position.

The incision through the mucous membrane and perichondrium has been the subject of much discussion. The two most universally used are Killian "buttonhole" and Freer's reversed L. I prefer the latter for the reason that the work, the incision through the cartilage, and the removal of the spur, is done in plain view of the operator. Through the Killian incision the work is done in the dark.

The incision is made as follows: A vertical incision is made from a little above the summit of the spur downward to the nasal floor. This goes through the perichondrium. Joining this at right angles, a horizontal incision is made along the base of the septum in the

floor of the nose forward through the mucocutaneous junction. This incision, as pointed out by Purcell, and concurred in by Freer, because of its taking in cutaneous structure, tends to lessen scab formation and rolling up of the flap.

The perichondrium is separated from the cartilage by blunt dissection, and the flap thus formed is reflected forward. Then the dissection is continued above, below and back of the spur.

The cartilage is now incised vertically in front of the spur, or paralleled to the dorsum, according to the size and location of the spur. Through this, the perichondrium of the other side is dissected. After being separated entirely from the perichondrium, the spur is removed with a pair of cutting forceps, such as Ballanger's or Knight's. Only that part of the cartilage should be removed that contains the spur. There is no reason for doing a complete resection. An abdominal surgeon would not resect ten feet of intestine when only one foot was injured. So, why remove more of the septum than is necesary for the removal of the spur!

After cleansing the nose, it is ready for packing. The object of the packing is to prevent post-operative hemorrhage, and to hold the flap in place. There are a number of different methods of packing the nose. Freer and Pynchon have found sterilized absorbent lint very satisfactory (absorbent cotton answers just as well). It is cut in narrow strips three-eighths to one-fourth inch wide and nine inches long, and introduced one at a time, alternating one in either nostril until the nose is snugly packed. The strips are introduced beyond the operated area, and cut off even with the anterior nares. Between each strip liquid alboline is used to prevent the edges sticking to the wound. The packing remains until the following day, when the unoperated side is unpacked and the top strip of the operated side removed. On the third or fourth day all the remaining strips are removed. This allows the flap to unite to the perichondrium of the opposite side by first intention.

After treatment consists in daily cleansing the nose and protecting the sensitive membrane by plugging the nares with cotton.

412-V13 *Candler Building.*

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THE DUTY OF OUR PROFESSION AND THE PUBLIC IN THE PREVENTION OF OUR MOST COMMON DISEASES.*

By J. B. ELLIOTT, M.D.,
Moundville, Ala.

Dating far back in the history of every tribe and nation the protection of the human life has been a problem of some considerable magnitude, and has received more or less attention from those who chanced to be, in a measure, responsible for it.

Some type of public hygiene has been cultivated from a time almost indefinite. Even among the ancient Egyptians, and in the laws of sanitation given the children of Israel by Moses, there are some rules laid down that might be followed with advantage even today.

Ever and anon epidemics of infectious diseases have broken out in different parts of our country, and caused death and distress to follow in their wake. The people in their fear and excitement during these epidemics, have wandered in darkness seeking ways of escape,

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and various indeed have been their speculations and superstitions as to why these visitations were sent. In this darkness and fear, superstition and ignorance, there have appeared occasionally men of science, who, basing their conclusions upon carefully observed facts, have marked out a path toward light. In the last century numbers of scientific men have appeared and our profession has made wonderful progress and at present, with our accumulated knowledge of the past, far-reaching opportunities lie out before us. Ways and means of preventing our most common diseases are now perfectly and clearly known. Shall we endeavor to make application of our knowledge of disease prevention now, or are we to wait yet awhile longer, hoping that future developments and discoveries may make the application easier? It seems that such waiting is not justifiable—human lives are at stake, and while we thus wait numbers of lives may be needlessly lost. It is, therefore, clearly before us, as the duty of our profession, to employ every method and exert every energy to the best possible advantage to prevent every disease we can.

Now, should every doctor in our entire country concentrate his every energy, and employ his every known method, do you suppose that success would come as a reward for such labors? No, not till the masses have been taught that they *too* have a part in this work. Not till the public has been educated up to what this duty is, and that nothing short of a religious performance of this duty will eradicate even the most common forms of disease. Just how we are to accomplish the arousing of interest and enthusiasm among the masses remains yet a difficult problem. Let me say just here that the most important progress we have made has been along the line of education. People have learned many steps toward preventing diseases, but are careless and negligent in putting into practice what they have learned. This, however, does not apply so directly to our larger cities as to those living in the country, in smaller towns and in the suburbs of our larger cities. Much has been done to eradicate disease by the improved sewerage system in the larger cities. The fight against hook-worm disease has also helped effect a reduction in the prevalence of typhoid fever, both of which are infections that are scattered mainly, if not entirely, from faulty disposal of excreta from the human body. The eradication of sewage-born infections, especially typhoid fever, hook-worm disease and the dysenteries, is one of the most vitally important problems with which our country, particularly the Southern States, is confronted today.

There is ample proof from many sources that proper sewerage in the cities, sanitary privies in the suburbs, smaller towns, and in the country will prevent typhoid, uncinaria, the dysenteries and will certainly do much to lessen the occurrence of diarrhoeal disease of children and, too, will not be without its effect on such diseases of adult life. By preventing these, the battle forces against tuberculosis will undoubtedly be strengthened and the prevalence of pneumonia and all such diseases will be markedly reduced. We see clearly that these are forceful measures of remarkably broad application in the prevention of disease, and still with all the accumulated knowledge that experiences of the past ages has lain before us, just three months ago I rode into one of our State's largest cities—a city that might well be called a pride of our South—and from our train windows as we sped through the suburbs on nearly into the heart of the city, I counted numbers of open, vilely unsanitary privies. Quite a few of them were in low, undrained places where all the excreta fell in stagnant water or in a damp marshy place not far from a pool of stagnant water, thus becoming most opportune places for the dissemination of typhoid fever and hook-worm disease. Not only in this one particular city are conditions of this kind to be found, but in suburban districts of all our large cities. In

the thus described districts of the cities, it seems that the Mayor, City Council and City Health Officer either have no authority, or are notoriously careless of the welfare and health of the people in these districts and of a danger that might threaten the city even more extensively. In the smaller towns similar conditions or even worse exist over which there is absolutely no authority, and the danger from epidemics of sewage-born infections none the less. The condition does not even stop here. Only a small per cent of the better class of country people have the convenience of a decently constructed privy, and where there is one it is merely a hiding place, with no idea to sanitation. Among a still larger per cent of country people a privy of any kind—sanitary or otherwise—is altogether a thing unknown to them. Even though the darkness hide them, they scatter promiscuously over the premises the different types of sewage-born germs. Over these conditions, at present, there is no authority, not even over the sanitation of the country public school—a place from which epidemics of different types often originate. Where authority is thus dethroned, the call of duty comes to some one. As in other matters of public interest, this call is not made to the preachers. It would put him in an embarrassing position for him to have to go into the home, inspect the premises and point out the uncleanliness of the place and the lack of sanitation, then show what was needed to be done and urge the family to carry out his instructions. In the first place the preacher, as a rule, is not any too well informed along such lines himself and if he were, such work is out of his calling. Surely then this call of duty is made to the medical profession—the only class of men whose life work has been such as would qualify them to instruct the public in matters of sanitation and secure the public's co-operation. The physicians must take the lead in the solution of these problems. Let us then be diligent in pointing out work that leads to sanitation, and let us urge every citizen to arise to a full performance of every duty that protects the health of himself and his fellowmen.

Of late much has been said as to the prevention of typhoid fever. Pitiable, indeed, to know that so much more has been said than done. It is true, we put our knowledge into practical use here and there, in places where epidemics are prevalent, but such efforts will never eradicate the disease, though the death rate is appreciably reduced. It seems to me a monstrous thing that we know the cause and remedy so well and are doing so little. We, as men of learning, should busy ourselves educating the masses in ways and means of preventing typhoid and urging them to apply every means to lessen its occurrence. "For every case of typhoid fever some one should be hanged," is an often heard statement that is too overdrawn to be accepted in its literal sense, but it does show us that some one in some way is responsible for it. To treat those sick with typhoid is our first duty, and an important one, but the prevention of its spread is our highest and most noble art, and our most imperative duty. When the profession and laity realizes that typhoid fever is a highly infectious disease, and become worked up to the great importance of preventing it, only then may we hope to make its occurrence as extremely rare as it should be. In a number of instances, physicians are too negligent in the prophylactic management of typhoid. In some cases humanity would be better off if the physician were sent for to give instructions in the matter of preventing others from contracting it, and let the patient go untreated, than to do as many times is done—dose out medicines to the patient that are not needed, and leave without any effort to ascertain the source of the infection, and without giving any instructions whatever to prevent its spread.

Some of our sister States have had, and I think still have, a law that makes it an offense punishable by fine or imprisonment to neglect

such important directions. I think it a well founded law. If a physician hasn't the interest of humanity at heart to discharge his full duty under such circumstances, he should be compelled by law to do it.

In any case where the diagnosis is not certain, especially if the temperature record and other symptoms look anyway suspicious, methods of typhoid prevention should be instituted. We should endeavor to impress how infinitely better precautionary methods well employed are than more cases, more suffering and possibly deaths. Where the trouble is suspected and the microscopic plan of diagnosis resorted to the problem is much easier, especially if a trained nurse is given charge of the patient; but in many cases a microscope is not at hand, nor can the family employ a nurse. The diagnosis will be delayed and after it is confirmed the doctor will have to improvise practical methods of disinfecting the discharges that he can trust to the family. He should provide the nurse or family with written or printed instructions regarding the disinfection of the discharges and general prophylactics, and at each subsequent visit it should be his duty to see that these instructions are carried out. One point that should be carefully noted is, that if a simple antiseptic solution is used as a disinfectant, the discharges are not merely to be brought in contact with it, but should be immersed in it for hours. Typhoid often occurs where the method of using costly antiseptics can not be employed. Many resort to the use of bichloride of mercury, which is one of our most powerful antiseptics, but it loses its efficiency in disinfecting the feces. Crude carbolic acid is cheaper and more efficient, but if none of the methods may be employed, hot water is always obtainable or the feces may be burnt. Disinfection and prevention should be our chief aim and when physicians do their full duty in instructing the public in the prophylactics of typhoid and seeing that these instructions are carried out, then we may hope for better results.

Theoretically, hook-worm disease is one of the easiest of all diseases to prevent. Practically the undertaking is one of the most difficult. The main hindrance in its prevention is the almost ineradicable carelessness or filthy habit among the laity. There is a laxity or carelessness too among some physicians in assisting in this work, but when we stop to think we are met face to face with the cold fact that about twenty per cent of school children are, from hook-worm diseases, rendered unable to profit from their study. Among the working classes, particularly those working in mills, mines, factories, etc., a larger per cent of the working ability is cut off. Thus we see that both our intellectual and economic development is inhibited by this preventable disease. Its prevention is truly a task, the main part of which naturally falls upon the physicians, whose best work can be done by educating the public in matters of sanitation, setting forth instructions and insisting that these instructions be rigorously carred out; and by citing instances where proper performance of duty by doctor and laity have done the most good. Our public press could do much to help in its prevention. The newspapers have had much to say jokingly about the "lazy disease." If they would begin now and devote as much publication to the dissemination of knowledge of its source, prevention, cure, and finally its eradication, this would do much to encourage the public to join hands with us in this great movement.

Last of the three preventable diseases I shall mention in this paper is malaria. Statistics have shown that malaria exists in every State in the United States except one, but owing to conditions favoring the growth of the anopheles mosquito, the Southern States and those along the Mississippi, Missouri and Ohio Rivers have the heaviest death rate. The death rate in the United States from malaria

is enormous—more in one single year than yellow fever has claimed in perhaps twenty years at any time of its prevalence, and today millions of our people are cut down in capacity to earn a livelihood by some form of malaria. The State of Alabama ranks third to highest in death rate with an estimated cost of something like three and a half million dollars per year. Statistics show that the United States is taxed between fifty and one hundred million dollars annually by malaria alone.

The eradication of malaria ranks high among the problems we have to deal with. Too much cannot be said about it, nor can it be said too often. We know that in some communities the eradication of the mosquito is impractical, if not impossible, because of the money necessary to accomplish this, but in few, if any, communities is it impossible for individuals to protect themselves against mosquitoes. Therefore, the educaton of the public on the mosquito as the carrier of malaria is what would do the most to reduce its prevalence. We should in lieu of this fact advocate a campaign of screening all homes and public meeting places and a screening, till radically cured, of all those known to be infected. We can best secure the help of the laity in this by pointing out what has been done in given communities. Among the brilliant achievements we might mention as examples are what has beeen done for Havana, Cuba; New Orleans and the Panama Canal Zone. Then we should stress the importance of every good citizen lending a helping hand.

THE END-TO-END ANASTOMOSIS OF BLOOD VESSELS.*

By GILMAN J. WINTHROP, M.D.,
Mobile, Ala.

The impetus given to blood vessel surgery by the work of Carrell, Crile and others and the recent application of vessel anastomosis to organ transplantation and to the transfusion of blood, in various pathologic conditions, warrant a resume of this branch of surgery.

The difficulties to be overcome in vessel anastomosis, and especially when applied to direct blood transfusion, are (1) Leakage, (2) Infection, (3) Secondary Haemorrhage, (4) Thrombosis, (5) Embolism. The perfectness of any method depends primarily on its removal of these dangers. The facility with which one method of anastomosis is accomplished depends to such an extent on the training and personal skill of the operator that the "ease" of one operation should not prejudice against another more technically perfect.

The technic of end-to-end anastomosis may be discussed under two headings (1) Direct Suture of the Vessels, (2) Anastomosis by Means of Some Mechanical Device or Prosthesis.

DIRECT SUTURE OF THE VESSELS.

Briau and Jaboulay (1), in 1896, united the severed carotids of dogs by means of U shaped sutures which everted the edges and approximated intima to intima. In ten experiments on dogs, thrombosis occurred with blocking of the vessel. A successful anastomosis was performed on the carotid of a donkey. Salomi later employed the same technic and claimed its discovery.

Murphy (2), in 1897, suggested an invagination suture method. He invaginated the proximal end of the severed artery into the distal end by means of 3 or 4 double-needled silk sutures, which penetrated only the middle and outer coats of the invaginated but all coats of the receiving end. After invagination

*Read before the Florida State Medical Association, Jacksonville, Fla.

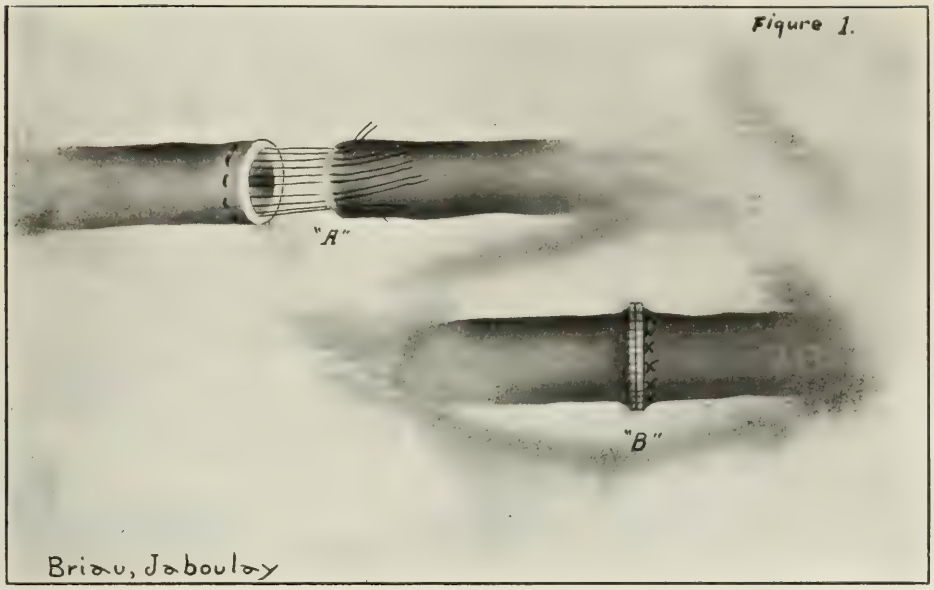

FIGURE I.

A. U-shaped sutures introduced. B. Sutures tied, everting edges and approximating vessels.

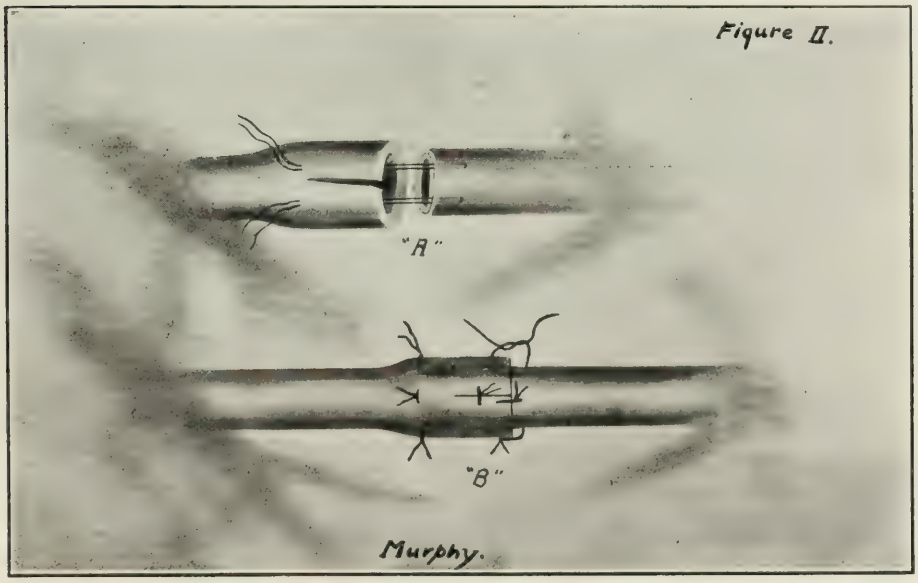

FIGURE II.

A. Receiving end slit. Two invaginating sutures in place. B. Invagination sutures tied and sutures maintaining invagination being tied.

the distal margin was sutured to the entering vessel way by interrupted sutures, passing through the adventitia and media of the proximal and all coats of the distal end. He noted that invagination was facilitated by splitting the distal or receiving stump longitudinally. Thrombosis occurred in a large proportion of his experiments.

Gluck (3), in 1908, after controlling the circulation with rubber covered clamps, excised a small section of the artery and slipped it back over one end of the vessel, as a cuff. A circular anastomosis, with interrupted sutures, was then made and finally the excised cuff drawn over the suture line and fastened there by stitches.

Bougle (4), in 1901, finding that Murphy's imagination method resulted in clotting, especially in small vessels, tried invaginating the vessel ends only a few m.m. and maintaining the invagination by interrupted sutures through the media and adventitia.

Carrell (5), in 1902 demonstrated an excellent technic for the circular anastomosis of artery-to-artery and artery-to-vein. Having freed the cut end of the artery and vein of excess adventitia by drawing it over the ends of the vessels and cutting it squarely off, he passes three fine silk sutures, saturated with sterile vaseline or oil, from without inward through all coats of the artery near its end. These guy sutures, at equidistant points on the periphery of the arterial lumen, are now passed through the end of the vein from within outward and being tied approximate the lumen of the vessels at three points. By traction on any two of the guy sutures the artery and vein margins are brought together in a straight line and are united by a simple over and over suture. By this running suture the three segments of the approximated vessels are joined together and the anastomosis completed. The venous clamp is first removed, then the arterial and the blood flow started.

Jensen (6), in 1903, after trying various methods, concluded that anastomosis by 2 or 3 interrupted or U shaped sutures, joined by continuous sutures, gave the best results. He experimented with both artery-to-artery and vein-to-vein anastomoses.

Amberg (7), in 1903, performed a number of artery-to-artery anastomoses by splitting the ends of the vessels longitudinally for 3 or 4 m.m. so that the edges could be everted like flanges and sutured together intima to intima.

Dorrance (8), in 1906, reported a number of experiments on horses and dogs in which a suture method was employed to repair longitudinal and transverse wounds of arteries and to unite vessels after complete transverse division. Having controlled the circulation with rubber protected clamps of a special design, the vessel ends are united by a single mattress suture and "the suture is continued as a continuous-mattress suture, dropping back half a stitch every third suture until the starting point is reached, then a half stitch is made and the suture continued back as a whip stitch until the starting point is reached again; then the two ends are tied." He employed number one Pagenstecker thread and the finest sewing-needle it could be threaded through.

Hartwell (9), in 1909, suggested a telescoping method for artery-to-vein anastomosis. After clamping and severing the artery he removes a portion of the adventitia, but leaves a small coil of it "curled up on the outside of the artery about 1 1-2 inches from the cut peripheral end." Three guiding sutures of fine silk are then passed, at intervals of 120 degrees, in the circumference of the cut end of the vein. By means of these guiding sutures the mouth of the vein is pulled widely open and the artery, greased with vaseline, passed into the vein for a distance of one inch and fixed by passing one of the guiding sutures through the rolled up adventitia on the artery and tying. The surplus circumference of the vein, about the inclosed artery, is clamped or sutured to fit snugly but not to constrict the artery. Hartwell reported satis-

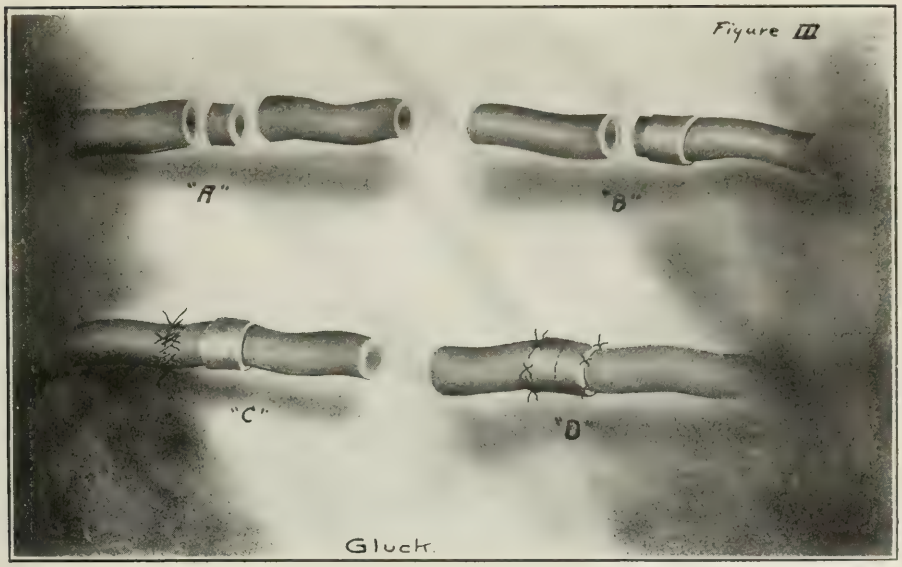

FIGURE III.

A. Cut excised. B. Excised cut slipped over vessel. C. Circular anastomosis completed. D. Cuff drawn over anastomosis and stitched.

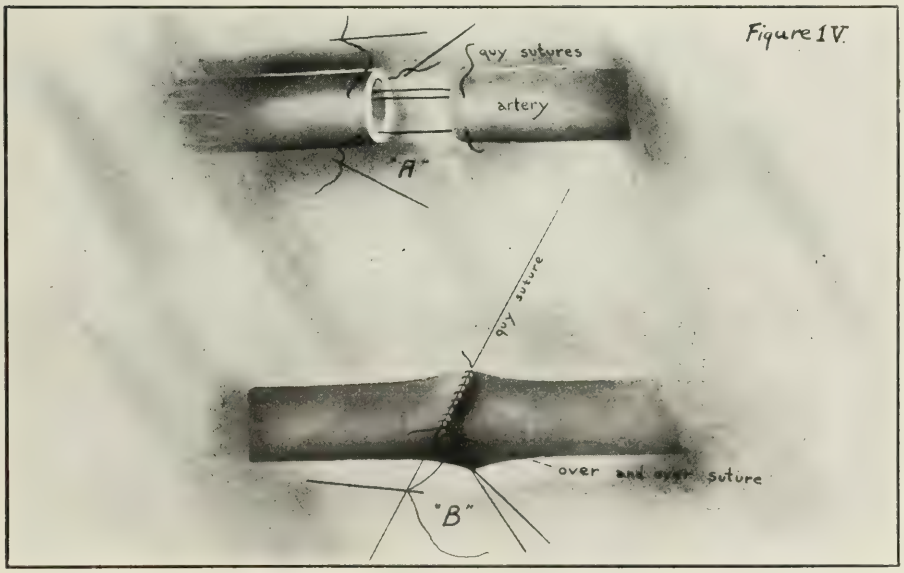

FIGURE IV.

A. Guy sutures introduced. B. Guy sutures tied. One segment of vessel whipped over and second begun.

factory results obtained on dogs and in one case in man.

Guthrie and Guthrie (10), in 1910, advised the use of hair sutures in vessel anastomosis and described a method of sterilization and preserving these sutures.

ANASTOMOSIS BY MEANS OF SOME MECHANICAL DEVICE.

Queirolo (11) probably first employed a prosthesis in blood vessel anastomosis. He passed the end of the vein through a short glass tube, reflexed the end over the tube and tied it there; then passed the tube, covered by the vein, into the end of the second vessel and fixed it by tying. He drew attention to the necessity of approximating intima to intima to prevent clotting.

Abbe (12), 1894, anastomosed the femoral artery of a dog by tying the ends over a small hour-glass tube of glass.

Nitze (13), in 1897, employed small ivory cylinders to effect anastomosis. These cylinders were slipped into the ends of the vessels in such a way that the intimae were approximated and the vessels were ligated over the cylinder.

Payr (14), in 1900, suggested the use of absorbable magnesium rings. After controlling the circulation with clamps, one end of the vessel was passed through the ring, a cuff turned back and tied, and this introduced into the second vessel and tied.

Höpfner used similar magnesium rings in numerous experiments on dogs. He found the method unsatisfactory in vessels of less than 3 m.m. in diameter.

Crile (15) invented a metal canula, transversely grooved, with a handle at one end. Canulae of various sizes (inside diameter 1.5 to 3 m.m.) were used to fit different calibered vessels.

In direct blood transfusion the donor's artery is exposed, all tributary branches carefully ligated, the vessel is then clamped and cut. The end of the artery is freed of excess adventitia, pushed or pulled through the canula, cuffed back and tied, with fine silk, over one of the grooves on the canula. The recipient's vein is then exposed, clamped and cut and its end drawn over the cuffed artery and tied. Crile later advised that the vein be drawn through the canula and cuffed and the artery drawn over it. The Crile method has given excellent results in the hands of many operators.

Ottenberg (16) employed as a prosthesis a small silver ring whose surface has two grooves. The technic he employed was similar to that of Crile except that silver wire was used to fasten the vessels to the ring.

Hepburn (17), in 1909, modified the Crile canula by adding a wide flange, perforated by four holes, to its base. The perforated flange aids in cuffing back the vessel and in drawing the second vessel over the first.

Elsberg (18), in 1909, constructed a special adjustable canula. The canula "is built on the principle of a monkey-wrench and can be enlarged or narrowed to any size by means of a screw at its end." The canula "is cone shaped at its tip, a short distance from which is a ridge with four small pin points which are directed backwards."

In application, the canula is screwed wide open, slipped under and around the isolated artery and its lumen then narrowed to slightly compress the vessel. The artery is now cut, cuffed back over the canula and held in place by the pin points. The artery, cuffed over the canula, is passed into a small transverse slit in the vein and tied. Rapidity of blood flow is regulated by changing the caliber of the canula by means of the thumb screw.

Advantages claimed for the instrument are —one canula will fit any vessel; pulling the vessel through the canula and tying are obviated; regulation of the rapidity of blood flow; and minimum exposure of the vein.

Ward (19), in 1908, reported experiments in which pieces of rubber tubing were implanted in the aortae of cats and sutured to the vessel. One cat recovered completely

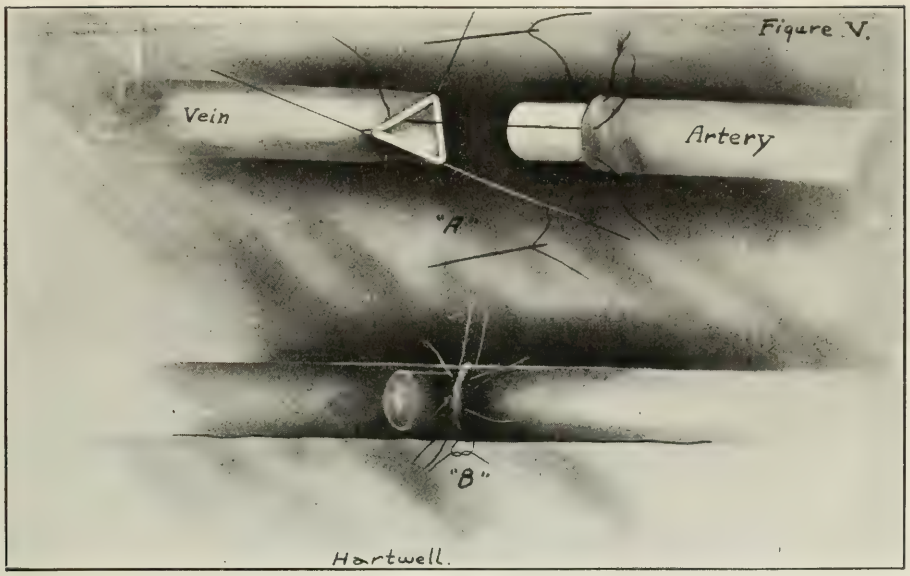

FIGURE V.

A. Sutures being passed through vein and cuff of adventitia of artery. B. Anastomosis completed and sutures being tied.

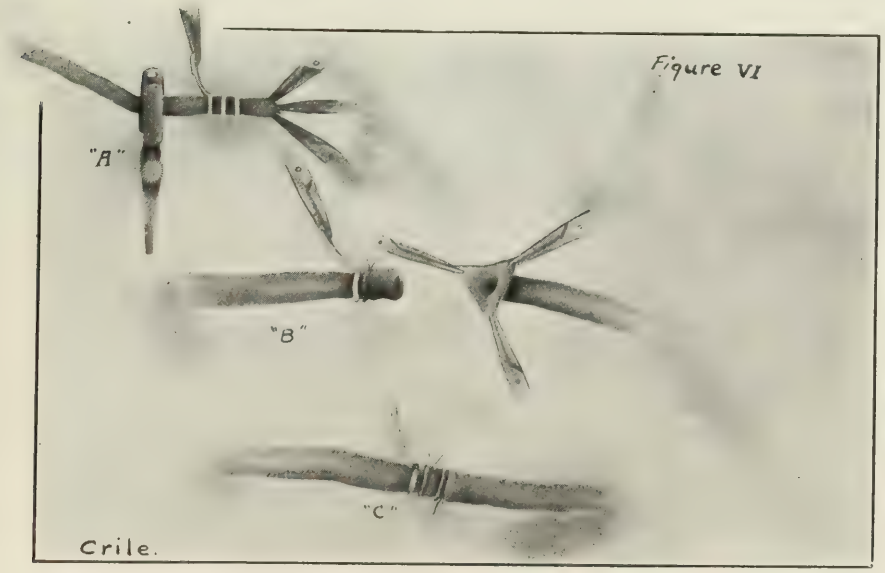

FIGURE VI.

A. Artery clamped and passed through canula. B. Artery cuffed and tied. Vein being drawn over it. C. Anastomosis completed.

and being killed, three weeks after the operation, the vessel was found entirely thrombosed, but a satisfactory collateral circulation had been established. He suggests the use of tubing in cases demanding immediate restoration of the circulation until collateral channels can form.

Frank and Baehr (20), also in 1909, suggested anastomosis by means of a vascular bridge or "link" of fresh or preserved animal blood vessel. In their earliest experiments the links were made of fresh dog's carotids, but later they preserved the links by formalin sterilization and storing in sterile paraffin oil. The formalized links kept in excellent condition for ninety days. Finally they prepared sterile dried links which were softened before using by being placed in salt solution.

Before sterilization a Crile canula is tied into each end of the link in the usual manner. In using the link, the artery and vein are clamped, a small nick made in each and the canula at one end of the link introduced into the artery and the opposite canula into the vein. The canula is introduced just as an infusion canula in intravenous infusion.

Using the links in 26 transfusions they note but one failure and that due to a kinking of the link in its preparation.

Advantages claimed for the link method are: "(1) A sufficient length of vesesl is obtained without extensive dissection of the artery of the donor or the vein of the recipient; (2) The link as now prepared has lost some of its elasticity and is well stretched so as to afford an unobstructed lumen within the canula; (3) The technic is familiar to every surgeon from its similarity to that used in intravenous infusion."

Brewer and Legget, (21), report experiments with paraffin coated glass tubes. The tubes are of various sizes, straight or bayonet shaped and have flanged ends. These paraffined tubes are introduced into the cut ends of the vessels, to be anastomosed, and fixed with ligatures. In 31 transfusion experiments they had clotting in but one instance and that due to the very small caliber of the glass tube.

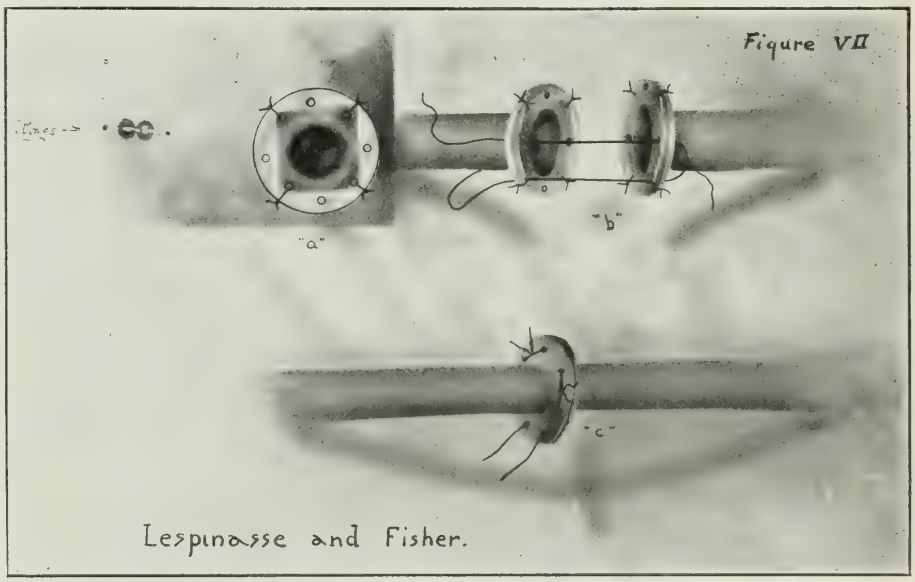

FIGURE VII.

A. Vessel passed through ring and fastened by four sutures. B. Approximating sutures being passed. C. Anastomosis completed.

A flow of 19 minutes was maintained in a case of severe gastric haemorrhage.

Dorrence and Ginsberg (22), in 1910, suggested vein-to-vein transfusion as preferable to artery-to-vein on the grounds that only superficial vessels are used which are easy of access and whose size is readily appreciable; the gradual flow of blood averts the dangers

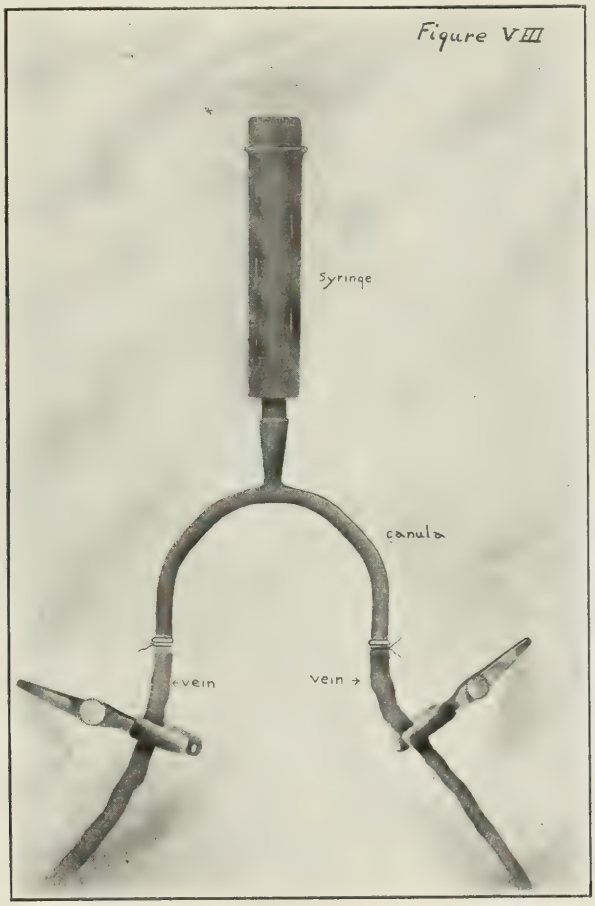

FIGURE VIII.

Arrangement of vessels and canula and syringe.

of engorgement and dilatation of the right heart. Simplicity seems to be the greatest advantage of the operation.

Lespinasse, Fisher and Eisenstaedt (23) claim excellent results and easy anastomosis by the use of flat magnesium rings. These rings of various sizes are perforated along their margins to facilitate stitching to the vessel ends. Anastomosis is accomplished by "First, one ring and a lock stitch; second, two rings which are sewed into the respective ends of the vessel; third, two rings and four ligatures; fourth, two rings, one of which is threaded." They claim for the method that constriction of the vessels and secondardy thrombosis are impossible; absence of haemorrhage; free flow of blood and simplicity of the operation.

Curtiss and David (24) have lately devised a Y shaped ground glass or metal canula for

vein-to-vein transfusion. The canula is coated with sterile vaseline, one arm of the canula is tied into the proximal end of the recipient's vein and the other arm into the distal end of the donor's vein. A Porge's or other ground glass syringe is now fitted to the neck of the canula. The clamp, previously placed on the donor's vein, is released and blood aspirated into the glass syringe; the donor's vein is again clamped while the clamp on the recipient's vein is released and the syringeful of blood slowly injected into it. This aspiration and injection process is repeated until sufficient blood has been transfused.

The advantages claimed for the method are: definite control of rate of flow and of the amount of blood transfused; simplicity of technic and time saved; assured success of the transfusion and lessened danger of transfer of disease from recipient to donor.

Soresi (25) has devised a double cylindered instrument, for vein-to-vein or artery-to-vein anastomosis, which obviates the necessity of "opening the vessels until they are ready to be brought together." The cylinders, which open by a simple pivot, are placed around the vessels to be anastomosed, are then closed and the uncut vessels folded back and caught by the hooks on the edge of the canulae. The vessels are now cut, about 2 m.m. from the edge of the cylinder and their ends inspected to see that the intima are well caught by the hooklets. The removable cylinder is now placed on the sliding bar of the instrument and the vessel ends closely approximated.

Soresi claims excellent results with the instrument and mentions as a chief advantage that manipulation is done only on the distended vessel and cuffing, etc., are more easily accomplished.

Janeway (26) has just devised a new instrument for transfusion or permanent anastomosis. The instrument consists of two small hemi-cylinders, which may be opened or closed by a simple spring arm. The cylinders are opened, the vessels introduced and cuffed back over them. The two parts of the instrument are then placed together in such a way that one cuffed vessel is invaginated into the second.

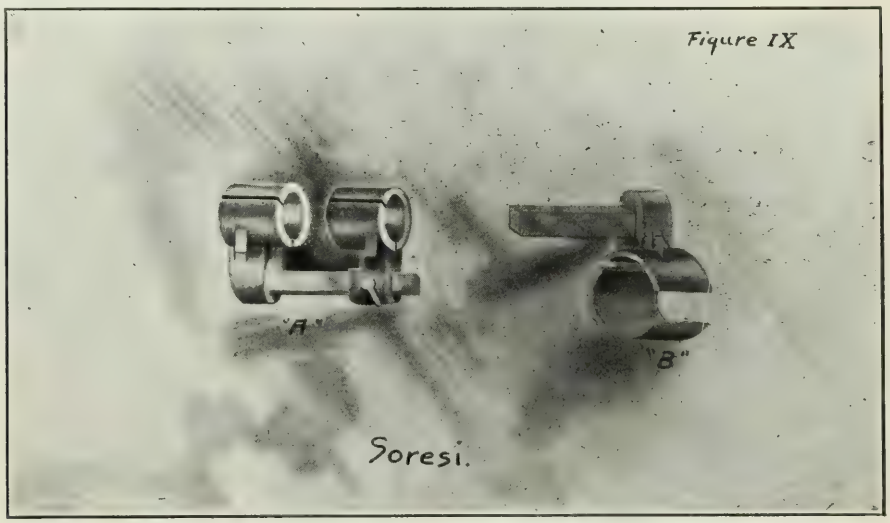

FIGURE IX.

A. Soresi canula. B. One cylinder opened.

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THE WORLD-VIEW OF THE EVOLUTIONIST

(The Journal in this issue presents its third instalment of this series. This chapter is taken out of its order and presented ahead of its place in the series because it contains certain matter of special interest to the medical profession. The Journal again invites its readers to a criticism of this serial.)

The conclusion reached by every scientific man in this field of research is that man and the larger apes—the chimpanzee, the gibbon, the gorilla and the ourang-outang—called the anthropoids from their likeness to man, are all derived from a common ancestry; just as, also, from another animal the horse and tapir and rhinoceros have been so derived; from another animal, the chicken and the pigeon, and from still another, the dog and the seal have come; related in that they both have the same parent stock from which they have been evolved. It is not believed by these scientists that man sprang from any existing ape, but that both man and ape have developed from some older form now extinct. What that older form was has not yet been made known, this being still a problem in paleontology.

Some remains found in Java in 1892 by Dr. Eugene Dubois,—a part of a skull, two teeth, and a femur,—have been thought to be those of an ancestor of man, since the skull is too small to be human. This animal is looked upon as a "missing link" between man and ape, and as a forerunner of man, as one of the ape-like forms through which man's nature evolved. The Professor of Zoology at Columbia University recently said: "There is but one generally accepted view regarding the ape-man, pithecanthropus of the Javan rocks. The remains of this animal prove among other things that its brain was intermediate between the average ape brain and the average human brain, that the animal was indeed ape-man and nothing else." From this higher ape, long extinct, man is supposed to have evolved, springing from it as a prodigy with a larger brain and more highly developed intelligence. This may have come—probably did come—as a sudden change, a "leap" in nature, such as DeVries saw at Amsterdam gardens in the primrose that changed by a series of "mutations" to a differenct form; or it may have

come by the slower but not less sure method of Natural Selection of small variations.

The chimpanzee and the gibbon have a brain capacity in the skull of 250 cubic centimeters, the gorilla and orang 500, the apeman of Java has 1,000, the low races of men have 1,240, and the higher races of men have 1,550 cubic centimeters of brain. The evolution of brain quantity and complexity led to man, eventually trebling and quadrupling the brains of the higher apes.

Some higher ape, having at a certain period become mutative,—produced offspring endowed with new qualities and properties. A larger brain, placed in a more spacious skull, allowed rapid development of the intelligence. This, transmitted to descendants, because of great advantage in procuring food and escaping enemies, and in the whole struggle for existence. Thus the new race propagated, learned to take care of its children longer and better, and so prevailed and progressed. The choice of better foods and the arts of preparing them for easy digestion led to less need of large jaws, which were also less required for attack and defense. Hence the jaws became smaller than those of the apes, under the law that disuse diminishes the size of an organ,—a result due, no doubt, to the decreased nutrition that always follows from lessened use

NEGRO BOY AND APES.

An interesting picture of a Negro boy, with a young Chimpanzee (left side of figure) and young Orang-utan (right side of figure).

(From Living Animals of the World. By permission of Dodd, Mead & Co.)

and consequently diminished blood supply to that part of the body.

The distinguished trait of man, and that which has given him most of his knowledge and most of his power over all other animals, is his use of articulate speech in making sentences which convey his ideas to the minds of others. During the centuries (perhaps 300,000 years) in which the variations were taking place that made the now lost intermediate forms between man and the ape-stem from which he evolved, that gave him erect posture, and a hand whose fingers were connected with larger and more intricate nerve centers, muscles and brain centers ever reacting on each other—during all these centuries of active variation, the nerve centers controlling speech varied greatly, and in such a way as to give to their possessors great advantage in the struggle for life. The skill that came to both hand and tongue was of necessity correlated with inborn favorable changes in structure of connecting brain cells. Man's more accurate use of his fingers, as compared with his ape relatives, is unquestionably due to a difference in the quantity and quality of nerve structure connected with the little muscles that control them. So likewise with the organs of speech, of which Prof. Cunningham, recently president of the British Scientific Association, says:

"Assuming that the acquisition of speech has afforded the chief stimulus to the general development of the brain, thereby giving a rank high above any other factor which has operated in the evolution of man, it would be wrong to lose sight of the fact that the first step in this upward movement must have been taken by the brain itself. Some cerebral variation, probably trifling and insignificant at the start, and yet pregnant with the most far-reaching possibilities, has in the stem form of man contributed that condition which has rendered speech possible. This variation, strengthened by natural selection, has in the end led to the great double result of a large brain with wide and extensive association areas and articulate speech, the two results being brought about by the mutual reaction of one process on the other."

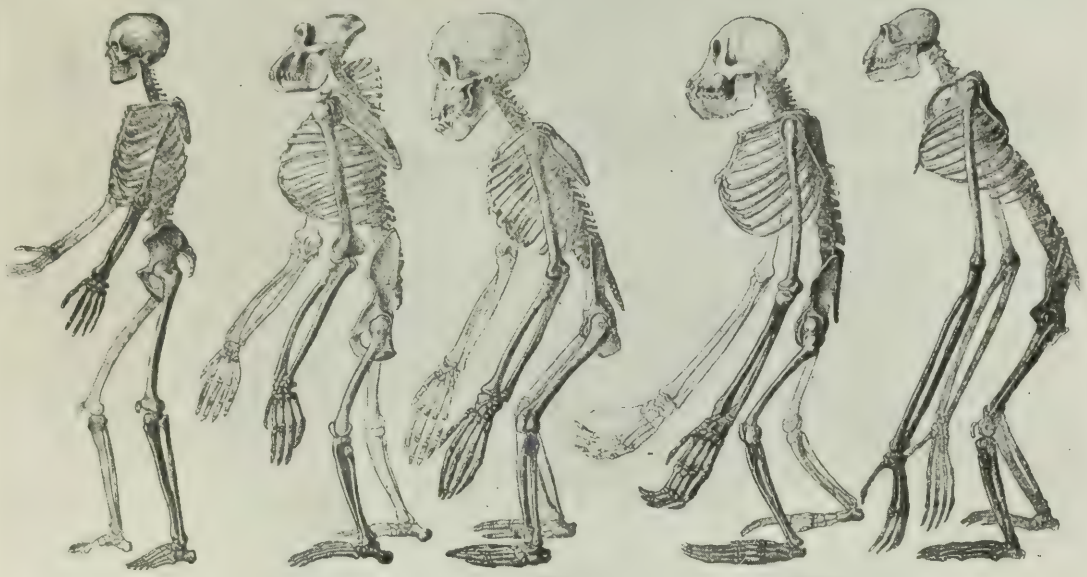
But while in brain mechanism, hand movements, and speech organs, man's body vastly improved by the variations which it had sustained during the mutative period that led to his present type, some parts of his body were weakened and lessened in size, and now tend to decay.

Indeed, fifteen organs in man are decadent, growing smaller and less active, though still used to some extent; among these are certain muscles of the leg and feet, the eleventh and twelfth rib, the toes, the caecum, the wisdom teeth, etc. There are about an equal number of organs in man that show an advance over the ape,—the skull in both size and shape; the hand in both shape and functions, the lower limb, the pelvis, the curvatures in lumbar region of the spine, the development of the buttocks and the calves of the legs, the nose, the cortex of the brain, the organs of speech, etc.

The comparative anatomists count about seventy "rudimentary organs" now of no use whatever, and therefore in a state of progressive decadence,—for utter disuse leads to atrophy and final disappearance. These rudimentary organs are those once used by some animal forms that were our ancestors. The possession of the same rudiments by different animals is a proof of their kinship, of their descent from the same forefathers. Among the rudimentary organs in man are the coccyx (which is a vestige of a tail), the muscles of the ear, the thirteenth pair of ribs, the muscles that make the hair rise, the vermiform appendix (whose decadence is the cause of so many deaths from appendicitis), the third eyelid, the pineal gland in the lower front of the brain (the vestige of an eye), etc. All these seventy organs are utterly useless. They are all in the ape, most of them as rudiments just as in man.

Those vestigial and rudimentary organs

SKELETONS OF FIVE ANTHROPOID APES.



Young Young

1/20 1/18 1/7 1/7 1/9

MAN (Homo) GORILLA CHIMPANZEE (Anthropithecus) ORANG (Satyrus) GIBBON (Hylobates)

From Ernst Haeckel's Last Words on Evolution.
Permission of Truth Seeker Co.

that are of little or no service to man, but that were of great use to his ancestors among the lower animals, are highly interesting both as relics of antiquity and as evidence of man's relationship to the apes of today. Crampton says (Doctrine of Evolution, p. 167): "As compared with the apes, the human wisdom teeth are degenerate; in the gorilla they are cut at the same time as the molars; and in the lower human races they come through the gums in early youth, while in the more advanced Caucasic races they are cut only in later life or not at all. The reduced vermiform appendix in man, a source of much ill health, is another structure that is a counterpart of a relatively larger and useful part of the digestive tract in the lower primates and other animals. Furthermore, the human tail is a reality, and not a fiction. Now and then an individual is born with a tail that may reach a length in later life of eight or ten inches; such structures are, of course, abnormal. But in every normal human being there is a series of little bones at the lower end of the vertebral column, constituting the coccyx, and this is just where the abbreviated tail of the ape and the still longer prehensile tail of the monkey arises from the body. Unless the coccyx is a tail, what can it be? If it does not represent the counterpart of the tails of other animals, what does it represent?

"Many of the vestigial organs of man appear more clearly in infancy and in embryonic development. The human embryo possesses a complete coat of hair, called the lanugo, which usually disappears before birth. This hair cannot be regarded as any less significant than the coat of hair which the infant whale possesses; it means a completely haired ancestor. The elements of this coat are arranged precisely as they are in the apes: upon the arm, for example, they point from the shoulder to elbow and from wrist to elbow. Unless the anterior limb of the hairy human ancestor was held in the position of the climbing apes, this arrangement would be disadvantageous, for the hair as a rain shedding thatch would be effective only upon the upper arm, while the hairs upon the forearm would catch the rain. In a word, this vestigial coat indicates in the clearest possible manner that the ancestor of the human species was not only hairy, but also arboreal in its mode of life.

"Again, every human infant is bow-legged at birth, and the natural position of its curved limbs is like that of the gorilla's, for the soles of the feet are turned toward one another. Again, the so-called great toe is at first shorter than the others, and for a time it retains the power of free movement that indicates a hand-like character of the lower limb in the ancestor. Many savage human races make use of the primitive grasping power of the foot which the higher races lose completely. An Australian and Polynesian can pick up small objects with the foot very much as we may with the hand."

The similarities in the anatomy and physiology of man and the higher apes are observable throughout their entire bodies and life histories. The same two hundred bones have almost exactly the same shape, and are similarly related. As to teeth, we find the number (32), and the form and general arrangement of the crown to be identical. Both have the same number of milk teeth which are shed in the same way. The teeth are identical in shape and color, and there is a far greater difference between those of higher apes and the monkeys, so plainly related to them, than between the teeth of man and the higher apes. The monkeys of America, for instance, have thirty-six teeth. There are the same number of vertebrae in the sacrum of man and the higher apes. The muscles are the same in number and nearly all identical in every way. The appendix is the same, and the brain nearly so. Some of the older apes, such as the gorillas, turn gray in old age, and tend to live nearly as long as man.

Many of the instincts of man are the same as those of apes. As instincts are predisposi-

EMBRYOS OF THREE MAMMALS.

(At three corresponding stages of development.)

(From Ernst Haeckel's "Last Words on Evolution." By consent of Truth Seeker Co.)

The embryos of man (M), the anthropoid ape (gibbon G), and the bat (rhinolophus, B) can hardly be distinguished in the earlier stage (the upper), although the five cerebral vessicles, the gill-clefts, and the three higher sense-organs are already visible. On the curved dorsal surface we see the sections of the primitive vertebrae. Even later, when the two pairs of limbs have appeared in the form of roundish fins (the middle row), the differences are not great. It is not until a further development of the limbs and head has taken place (lowest row) that the characteristic forms are clearly seen. It is particularly notable that the primitive brain, the organ of the mind, with its five cerebral vesicles, is the same in all.

tions organized in the nervous system that make the animal react in definite ways to certain stimuli just as their ancestors did, the possession of the same instincts indicates the same ancestry. A human infant of a few days old will clutch a finger placed in the palm of its hand and hold on so firmly that he can be drawn up and held suspended in the air for a moment or two. This impulse to clutch and hold on a limb was no doubt established through the habitual acts of our tree-dwelling ancestors. Also, it is well known that the human instincts of greed, of play, of imitation, of deception, of curiosity, of social converse, of care of children are all found well developed in the apes.

The evidence from embryology is absolutely conclusive. The life of the foetus—nine months in both—goes through the same changes in the same order. The foetus is related in exactly the same way to the placenta and other membranes of the uterus, which has the same shape in both; in both man and apes the uterus is pear-shaped, the placenta is metadiscoidal, and the decidua is folded back, three conditions found in no other animals. The foetus of a man is covered with hair at the fourth month (the lanugo), and can with great difficulty be distinguished from that of a gibbon of the same age; the changes in the embryo are the same,—and the fish-like gill slits on the sides of the neck, and the development of a tail, are identical in both.

The most intimate identity of lineage of man and ape has been found in the constitution of their blood, its component parts being the same for both. This is a recent discovery and, as explained in Metchinokoff's "Nature of Man," page 53, in what is called the "blood test," is as follows:

Human blood is injected several times into any animal. Some time afterward the animal is bled and a clear, limpid serum devoid of corpuscles is taken from the coagulated blood. When there is added to this one or several drops of human serum, there is an immediate precipitate which falls to the bottom. A little dried human blood, dissolved in normal salt solution placed in a tube containing the serum of an animal prepared by injections of human blood, will form a precipitate in this solution, as will also that of the larger apes,—the gorilla, the chimpanzee, ourang-outang and gibbon. In a similar way it can be proved from what animal or family of animals any blood or blood stains may have come. The relationship of chicken and pigeon, for instance, has been shown. This method is now used in the courts of justice in the most enlightened States, and relied on as conclusive in its results.

Dr. Hans Friedenthal, of Berlin, has recently made some experiments in the transfusion of blood from one animal to another which showed that the serum of one blood destroys the cells of blood from another animal unless they both belong to the same family. The blood of the dog transferred to the rabbit will injure, but transferred to the fox or the wolf will blend with it and no harm is done. His experiments showed that human blood acts poisonously on and decomposes the blood of the lower apes and other mammals, but has not that effect on the blood of the higher apes,—the chimpanzee, the gorilla, the ourang-outang, and the gibbon. These experiments seem clearly to establish the real blood relationship between these higher apes and man.

Many other analogies are found. The hylobates syndactylus and lenciscus, both of the family of gibbons, sing a full octave, making use of the same intervals of number of sound waves that man does. (Darwin's Descent of Man, Chap. XIX). The chimpanzee, which has been most carefully studied in its African home by Mr. Garner, an American, is reported by him to have a language of articulate sounds. It makes no sentences, but its words are, in all essential particulars, analogous to human ones. Mr. Garner has made a dictionary of quite a number of these words with

their meanings. Many of them he has caught on the phonograph and when they are repeated in the presence of a chimpanzee, the animal acts just as the idea in the word would indicate or suggest. He says, on page 108, of his work, "Apes and Monkeys," The speech of the chimpanzees is limited to a few sounds, and these chiefly relate to his natural wants. * * * The total number of words that I have been able to distinguish up to this time is about one hundred. Of these I have interpreted about thirty. I have learned to use ten of these words so that I can make myself understood by them."

This naturalist also states that, though ordinarily the chimpanzee does not live in herds, usually being seen one at a time, or as a family, the two parents and their young, yet they have been known to assemble, and while some would beat sticks against the ground, others would leap and jump about as if manifesting joy. He found in an African village one chimpanzee which knew the name of the people, and spent his time playing with the children, going through his part in simple games; and would at command take a vessel and bring water from a spring.

As to the speech of monkeys, Mr. Garner says: "The speech of monkeys and human speech resemble each other in all essential points. The speaker shows that he is conscious of the meaning which he desires to convey through the medium of speech, and he awaits and expects a reply. If it is not given, the sound is repeated. He usually looks at the one addressed. They interpret the same sound in the same way at all times. Each race or species of monkey has a form of speech peculiar to its kind."

These likenesses of body and mind seem conclusive proofs of the fact that man and apes belong to the same family of animals. Ascent from these lower forms should apparently give to the human family hope of an evolution still higher; yet man's type has been fixed for at least six or eight thousand years with no appreciable change, except from some blending of races by intermarriage and miscegenation. This fixedness of type is shown by a study of the heads and bodies of pictures and statues made into rock and clay by the Babylonians and Egyptians more than six thousand years ago. The features of a Jew made at that time are identical with those which he presents now; and the same is true of types in Arabia, some of whom now look exactly like figures seen on clay tablets in Assyria.

The difference in mind and achievement between man and the higher apes, vast as it is, is no doubt due entirely to difference in the quantity and complexity of the brain, and the new uses of hand and tongue correlated with it. Though there is a great similarity in form of brain, there is a vast difference in the size of the brain in man and ape, and also in the quantity of the gray matter of the brain. In the average European the brain weighs about 1,400 grams, or 3 per cent of the body-weight. The brain of the negro, Australian and Oceanic races, weighs from one to four ounces less than that of the white man. The brain of the Chinese weighs about the same as that of the Caucasian of Europe. Thus the brain weight of the human family is approximately the same. That of the babboon is only 360 grams, or one-half of 1 per cent of body weight. Man has six times as much brain in proportion to body weight as the baboon. It is this superiority that has given man the use of his hand and tongue and dominion over the earth, the variation from some higher ape doubtless having been a result of a sudden leap or "sport" in nature which occurred,—so geology seems to show—about (800,000) eight hundred thousand years ago.

It is corroborative evidence of this view of man's origin, to find that a number of his ailments,—hernia, appendicitis, uterine displacements, floating kidney, impairments of the digestion, due to the pulling down of stomach and bowels (gastroptosis), not found among

the other aminals, are due to the fact that man now stands erect, while his organs and tissues are arranged for an animal that went on "all fours." The erect posture, assumed while using the hands for grasping, put a strain not found in the quadruped life on certain organs and tissues. A large part of the human family has one or more of these ailments.

Prof. Henry E. Crampton says: "Only one real distinction can be found to separate man from the apes—the higher development of the brain. The erect posture, the correlated modifications of skeletal and muscular structures, and apparently the powers of speech and reason, seem to be dependent upon the enlargement of this organ. But the most careful analysis has so far failed to detect any essential differences in either functional or structural respects between the human brain and the corresponding organs of the higher apes.

"When we review the many human races from the Caucasian to the dwarf Negrito, we traverse a downward path which will bring us inevitably to the highest apes. In our survey we pass from the Caucasian, with the largest brain and cranium and with straight jaws well underneath the brain-case, to the African pygmy, with a relatively small brain, with huge projecting jaws and with prominent ridges over his eyes; one step more along that path would bring us to the gorilla or the chimpanzee. The array of lower primates, from the lemur to the gorilla, gives a series of forms exhibiting a progressive advance in respect to the size of the brain and the cranium, and the gradual retreat of the jaws to a position underneath the cranium; and one step further brings us to man. In a word, these two lines join—in fact, they are directly continuous. There is a far smaller difference between the lowest man and the highest apes than we have been accustomed to suppose. Certain races of men have far surpassed their fellows of the lower races, which, like the brute pygmy, remain nearer the common structural form from which all men have sprung."

Thus, though the higher races have climbed far above the lower races of men, the highest man must take his place in the family of animals that includes the chimpanzee, the gorilla, the gibbon, the ourang-outang. Thus with all his noble qualities and exalted powers, "he still bears in his bodily frame the indelible stamp of his lowly origin."

BOOK REVIEWS.

A TEXT-BOOK OF MEDICAL DIAGNOSIS.

A Text-Book of Medical Diagnosis. By James M. Anders, M.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine, and L. Napoleon Boston, M.D., Adjunct Professor of Medicine, Medico-Chirurgical College, Philadelphia. Octavo of 1195 pages, with 443 illustrations, 17 in colors. Philadelphia and London. W. B. Saunders Company, 1911. Cloth, $6.00 net; half Morocco, $7.50 net.

There is so much emphasis laid upon the diagnosis of pathological conditions in the present day practice of medicine, that it necessitates numerous works being written on the subject. New methods and improved tecnique are constanly being worked out, and every year marks a closer approximation to accurate diagnosis, so that a physician, in order to keep abreast with the times, must search for improvement in his methods. There are numerous guides to diagnosis now available.

The book before us for review, is a most excellent work. To know that it is written by such eminent men as Dr. James M. Anders, and Dr. L. Napoleon Boston, is sufficient proof of its perfection and usefulness, to recommend this text to every physician. It is written at the solicitations of students and practitioners. Its purpose is to furnish an improved method of determining the clinical features of diseases, and of correlating symptoms with disease changes producing them. There are brief pathological definitions of special diseases, numerous diagnostic tables, and methods of laboratory diagnosis. It is profusely illustrated with colored plates and photographs.

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Next Meeting Hattiesburg, Miss., November 14-16, 1911.

The Hattiesburg Meeting

On the 14th, 15th and 16th of November, an opportunity for combined benefit and pleasure will be presented to the physicians residing in some of the Southern States that, for attractiveness, from every point of view, whether physical, social or professional, can hardly be excelled. The occasion is the annual meeting of the Southern Medical Association, and the place of convocation is the game little city of Hattiesburg. The term little, be it understood, is used in no invidious sense. Though overgrown aggregations of park and population may consider her a little city, yet one and all are obliged to say "there's nothing small about Hattiesburg." The old way of building cities was to expand the limits as they were crowded outward and provide increased accommodations after the visitors who needed them had become discouraged and gone to return no more. But that is not Hattiesburg's way. Gifted with foresight, she knew she had come to stay, and proceeded to attract everything within reach, until now one can go there by any one of four railroads, from any State in the Union, in palace cars that are met at the depot by taxicabs that take one to a hotel, one of which is the *largest in Mississippi*, and one of the most finely appointed hostleries in the South.

Hattiesburg opens her arms to all who can come, and promises ample accommodation and comfort. No need to worry about that. In the impossible event of her four hotels being filled, every home in the city will throw wide open their hospitable doors and give a Southern welcome.

But chief among the attractions for doctors is the program prepared for this meeting of the Southern Medical Association.

To make individual comments upon the eminent gentlemen whose names appear in the program as authors of papers for this meeting would require more space than is here avail-

able, but their kindness insures one of the most interesting and important meetings in the history of the Association.

Any member who fails to be present will always regret it. Besides the splendid program provided by the section officers, the physicians of the city will make the social features an occasion to be long remembered.

There is another reason why every member should demonstrate his loyalty by attending. The South should stand up for her own! Great and useful as is the American Medical Association it cannot satisfy the needs of the

HOTEL HATTIESBURG.

Southern physician as can an organization of his own home people. We who live in this doubly favored part of this favored land know that there exists deep down in our hearts a spirit of devotion to our own section which inspires us to increased effort in its honor. Not that we love our whole land less, but we love our Southland more. We, the members of the Southern Medical Association, have undertaken to bear to the front and maintain the honor of the standard of Southern Medicine.

In past years it has needed defense.

The exaggeration of newspaper writers, the vanity of uneducated men posing as doctors, and the peculiar conditions prevailing, caused the medical profession of the South to be viewed unjustly, the more ignorant class claiming most attention because more picturesque.

The names of men like Sims, Wyeth, McGuire and Thomas were forgotten, and "Southern doctor" was not considered a very distinguished title.

To correct such errors, to give to our profession and to humanity the valuable truths we have wrung from clinical experiences peculiar to our climate, to elevate the standards of study and ethics and to afford to every member an opportunity to show the stuff he is made of, these are some of the objects of this Association.

Every Southern doctor who loves the South and is true to its traditions should prove his loyalty by adding his name to the roll of the Southern Medical Association and standing shoulder to shoulder with his fellows in the great work opening out before us.

Its mouthpiece, the SOUTHERN MEDICAL JOURNAL, penetrates to the remotest corners of every eligible State and is widely distributed in the others. It brings to its members all the medical and surgical news of the world. It stands ready to deliver your message, if you have one, to the whole profession. The Association needs YOU.

Fall in, Brothers, fall in!

The preliminary program appears elsewhere in this issue.

Association of Southern Public Health Officials

The proposed organization of the members of State Boards of Health of the Southern States, suggested by Dr. Dowling, President State Board of Health of Louisiana, into affiliation with City and County Health Officers, all to constitute one body under the above name, has met with such earnest approval from every quarter that it is expected that the matter will be successfully consummated at the approaching meeting at Hattiesburg. In connection with this desirable organization it has been suggested the Southern Medical Association establish a Section on Public Health and Sanitation, to which papers ger-

mane to those subjetcs may be assigned for reading and discussion.

It is vitally important to the nation that points and ports of entry along our Southern coasts and boundaries shall be well guarded against epidemic invasion, and it is a logical proceeding for those in charge, and upon whom such an immense responsibility rests, to get together at stated times and confer as to their manifold duties and the best ways to perform them for the protection of the people. The Secretary of the Association has sent out a number of letters to the health officials in various States and counties, asking the opinions and advice, upon this matter, of those best qualified by position and experience to judge. The response has been prompt and enthusiastic from the very first. To print all the letters thus received would require more space than the JOURNAL occupies, but below we give a few extracts from some of them picked at random from the pile:

"I approve of the plan, and agree with you that such an organization will be a great benefit to the South."—*George S. Brown, President State Medical Board, Arkansas.*

"I agree with you most heartily that an organization such as you suggest is extremely desirable."—*Health Officer, Asheville, N. C.*

"I think this a most excellent idea, and great good can come from it."—*James M. Jackson, M. D., Miami, Fla.*

"I think this is a thoroughly desirable step and shall do anything in my power to aid in its consummation."—*A. W. Freeman, M. D., Department of Health, Virginia.*

"I think very favorably of the organization of health officials of the South."—*H. G. Hall, M. D., Aiken, S. C.*

"I am in hearty accord with your idea of organizing the health boards of the South for special work."—*G. S. Bryan, M. D., Amory, Miss.*

"I am heartily in favor of such an organization and will certainly be present."—*I. W. Cooper, M. D., Member Misssissippi State Board of Health.*

"* * * a timely and happy idea, and I would be glad to see it carried out."—*J. H. McDuffie, M. D., Columbus, Ga.*

"I heartily approve of the proposed organization of the health officers of the South."—*Stuart McGuire, M. D., Richmond, Va.*

"I think the plan an excellent one and would be glad to be of assistance in forming such an Association, as conditions in the South differ so materially from other sections of the country that I think such an organization is warranted."—*James A. Hayne, M. D., State Health Officer, South Carolina.*

With the approval and support of such men, and there are also many others who likewise approve, the organization of the State Boards of Health, Health Officers and Medical Examiners of the Southern States into a practical, working body should easily be accomplished at the Hattiesburg meeting. The good that should result from such "team work" in protecting our people from disease and incompetency is beyond computation.

Alumni Reunions at Hattiesburg

One of the important features of the meeting of the Southern Medical Association at Hattiesburg, Miss., November 14, 15 and 16, will be the alumni reunions of the leading medical colleges of the United States, particularly those of the South. The medical departments of Tulane, Johns Hopkins, University of Pennsylvania, University of Virginia, University of Alabama, Vanderbilt, Birmingham Medical College and others have approved the plan and are arranging for their alumni in the States of Georgia, Florida, Alabama, Mississippi, Tennessee and Louisiana to meet at Hattiesburg.

No detailed plan has been formulated, but some form of entertainment will be arranged for these alumni reunions. It has been suggested that a luncheon or dinner be served

for all those who attend the meeting, at the Hotel Hattiesburg or some large hall, with separate tables for the alumni of the different medical schools. It has also been suggested that an entire evening be allotted to the alumni meetings, and that each school represented should have a smoker. There will be the time and place for such arrangements, and announcement will be made after the plans have been definitely settled.

When old college men meet after years of life's stern realities have set their mark upon them, it is a delight to renew old affiliations and revive for a few pleasant hours the college spirit that inspired the efforts of happy days gone by. Doctor, write your old college friends to meet you at Hattiesburg.

Notice! Reduced Railroad Rates!

Visitors to and members of the Southern Medical Association who attend the Hattiesburg meeting should be careful to secure "certificate receipts" from the railroad agents when purchasing tickets. This is the only time they can be obtained, and without them no reduced rates will be granted. Upon registering at the hall of meeting these certificates should be deposited with the Secretary, or his representative, who will countersign them and have them properly vised by the special agent of the railroads, Mr. E. P. Robinson.

The vised certificate will then be returned to its proper holder on call.

Upon purchasing tickets to return, holders will present their certificate at the window of the ticket office, when they will receive their ticket for half the regular rate, plus fifty cents. Certificates are not transferable, and will be accepted nowhere except at the ticket office. They are valid not more than three days after the date set for adjournment.

Certificates will be obtainable at the offices of departure, November 10-16, inclusive, 1911.

Fares amounting to less than 75 cents will not receive certificates.

This arrangement does not include the Alabama & West Point railroad.

SEALE HARRIS, M. D.,
Sec'y-Treas., S. M. A.

Preliminary Program of the Fifth Annual Session of the Southern Medical Association at Hattiesburg, Mississippi, Nov. 14-15-16, 1911.

General Meetings at Hattiesburg Opera House.

Opening Prayer, Dr. A. F. Watkins, Pastor Main Street M. E. Church, Hattiesburg.

Address of Welcome, T. S. Jackson, President Hattiesburg Commercial Club.

Address of Welcome, Dr. Charles C. Hightower, Secretary Forrest County Medical Society.

Response, Dr. J. M. Jackson, Miami, Florida.

Report of Committee of Arrangements, Dr. W. W. Crawford, Chairman.

President's Address, Dr. Isadore Dyer, New Orleans.

This preliminary program is published that those interested may have some knowledge of the papers and authors, but the order in which they may be called is left for future arrangement. Many other noted Southern physicians and surgeons will attend the meeting and take part in the discussions.

GENERAL SESSIONS ON PUBLIC HEALTH AND PREVENTIVE MEDICINE.

"The New Prescriptions," Oscar Dowling, State Health Officer of Louisiana, New Orleans.

"Medical Organization—Its Philosophy and Objects," W. H. Sanders, State Health Officer of Alabama, Montgomery.

"Prophylaxis of Insanity," J. M. Buchanan, Superintendent East Mississippi Insane Hospital, Meridian.

"The Psychic Center," J. T. Searcy, Superintendent Alabama Bryce Insane Hospital, Tuscaloosa.

"Important Factors in the Prophylaxis of Malarial Infection," Captain Charles F. Craig, U. S. Army, Washington, D. C.

"The Prophylaxis of Uncinariasis," C. Wardell Stiles, Public Health and Marine Hospital Service, Washington, D. C.

"Rural Sanitation," A. W. Freeman, Assistant State Health Commissioner, Richmond, Va.

"Dispensary Work in Mississippi," W. S. Leathers, Director of Public Health and Sanitation for State of Mississippi, University, Miss.

"A Menace to the South," Creighton Wellman, Tulane University School of Tropical Medicine, New Orleans. La.

"Sanitation of Southern Cities," Charles A. Mohr, City Health Officer, Mobile, Ala.

Discussion of the Proposed Organization of City, County and State Health Officers, Boards of Health, and Boards of Medical Examiners of the Southern States.

SECTION ON MEDICINE.

William Kräuss, Chairman,
Memphis, Tenn.

C. C. Bass, Vice-Chairman,
New Orleans, La.

H. E. Mitchell, Secretary,
Birmingham, Ala.

Chairman's Address, William Krauss, Memphis, Tenn.

"Dietetic Treatment of Arterio-Sclerosis," Allen Eustis, New Orleans, La.

"Chronic Heart Disease with Some Early Diagnostic Symptoms," J. H. Honan, Bad-Nauheim, Germany.

"The Stokes-Adams Syndrome," J. G. Gaither, Oxford, Miss.
"Pyelitis in Infancy," D. T. McCall, Mobile, Ala.
"A Review of the Possible Etiological Factors in Malarial Recurrences. The Significance in These Cases and Their Treatment," Graham E. Henson, Crescent City, Fla.
"Some Notes upon the Histology of Malaria," M. Couret, New Orleans, La.
"Pernicious Malaria, with Cerebral Symptoms Resembling Heat Stroke, with Report of Cases," H. H. Booth, Drew, Miss.
"Control of Typhoid Fever by Vaccination," James J. Peterson, Mobile, Ala.
"The Vaccine Therapy in Typhoid Fever," John D. Elliott, Jr., New Orleans, La.
"The Dietetic Management of Typhoid Fever," J. B. Guthrie, New Orleans, La.

SYMPOSIUM ON ACUTE ANTERIOR POLIOMYELITIS.

"History of Epidemics of Anterior Poliomyelitis in the United States," B. L. Wyman, Birmingham, Ala.
"History of Birmingham Epidemic of Anterior Poliomyelitis," Robert Nelson, Birmingham, Ala.
"Etiology and Pathology of Poliomyelitis," E. M. Mason, Birmingham, Ala.
"Symptoms of Anterior Poliomyelitis," J. E. Seay, Birmingham, Ala.
"Report of Case of Infantile Paralysis with Unusual Features," W. G. Somerville, Memphis, Tenn.
"Diagnosis of Poliomyelitis," J. Ross Snyder, Birmingham, Ala.
"Treatment of Poliomyelitis," Thomas D. Parke, Birmingham, Ala.
"Orthopedic Treatment of the Results of Infantile Paralysis," Michael Hoke, Atlanta, Ga.

"Treatment of Placenta Previa," Z. B. Chamblee, Birmingham, Ala.
"How to Avoid Some of the Common Errors in the Diagnosis of Skin Diseases," M. T. Gaines, Mobile, Ala.
"The Value of the Clinical Laboratory in Diagnosis," E. S. Sledge, Mobile, Ala.
"Malta Fever," J. D. Weis, New Orleans, La.
"The Lucedale Epidemic of Cerebro-Spinal Meningitis," W. D. Ratliff, Lucedale, Miss.
Title to be announced, M. T. Gaines, Mobile, Ala.
"Specific Treatment of Leprosy," C. W. Duval, New Orleans, La.
"Vital Statistics in Sanitation," E. L. Green, Carpenter, Miss.
"The Nutrition of Children," S. F. Hale, Mobile, Ala.
"Functional Dyspepsias of Reflex Origin," Sidney K. Simon, New Orleans, La.

SYMPOSIUM ON PELLAGRA.

"A Discussion of the Etiology of the Symptom-Complex Called Pellagra," J. S. Turberville, Century, Fla.
"The Etiology of Pellagra—My Theory," John Jelks, Nashville, Tenn.
"Are the Jews Immune to Pellagra," Bernard Wolff, Atlanta, Ga.
"Pseudo-Pellagra," C. H. Lavender, U. S. Public Health and Marine Hospital Service, Savannah, Ga.
"Symptoms of Pellagra," Louis LeRoy, Memphis, Tenn.
"Pellagra in Tennessee," J. A. Albright, Nashville, Tenn.
"Observations on Pellagra in Italy," H. P. Cole, Mobile, Ala.
"A Cursory Study of the Skin Lesions in Pellagra and Their Differentiation," H. E. Mehage, New Orleans, La.
"A Discussion of the Gastro-Intestinal Aspects of Pellagra," George M. Niles, Atlanta, Ga.
"The Nervous Side of Pellagra," C. C. Bass, New Orleans, La.
"The Prognosis of Pellagra," C. C. Bass, New Orleans, La.
"Treatment of Pellagra," J. A. Kimbrough, Thomasville, Ala.
Discussion to be opened by Creighton Wellman, New Orleans, La.

"Acute Intestinal Infantilism," Marion McH. Hull, Atlanta, Ga.
"Two Unusual Cases of Morphinism," George E. Pettey, Memphis, Tenn.
"Tuberculosis," P. J. Glass, Mobile, Ala.
"Pyloric Stonosis in Infants," Gaston J. Griel, Montgomery, Ala.
"Some Intestinal Parasites of North Mississippi," Louis Kohlheim, Saltillo, Miss.
"Alcohol as a Therapeutic Agent," T. H. Frazer, Mobile, Ala.
"Vaccine Therapy in Pertussis," Allen Eustis, New Orleans, La.
"Use of the Cystoscope in Diagnosis," F. A. McDonald, Memphis, Tenn.

SYMPOSIUM ON SYPHILIS.

(Joint Session with Sections on Surgery and Ophthalmology.)

"The Study of Wasserman's Reaction in Congenital Syphilis," L. R. DeBuys, New Orleans, La.
"Further Observations of Salvarsan on the Wasserman Reaction," William Litterer, Nashville, Tenn.
"The Newer Methods of Diagnosis in Syphilis of the Nervous System," Roy Van Wart, New Orleans, La.
"Syphilis and the Eye," M. Feingold, New Orleans, La.
"Eye Lesions After the Administration of '606,' with Report of Case," J. C. O'Gwynn, Mobile, Ala.
Syphilis (title to be supplied), Joseph Hume, New Orleans, La.
"Treatment of Syphilis," Toole and Scott, Birmingham, Ala.
"'606,' Report of 250 Cases," J. O. Rush, Mobile, Ala.
"The Technique of Intravenous Injection of '606'—A Plea for Its Use, and a Report of 407 Administrations," Edgar L. Ballenger, Atlanta, Ga.
"Diphtheria," W. W. Harris, Selma, Ala.

"Intubation," J. J. Waller, Olive Springs, Tenn.
"Leukemia," J. E. Paullin, Atlanta, Ga.
Title to be announced, H. M. Folkes, Biloxi, Miss
Title to be announced, E. Bates Block, Atlanta, Ga.
Title to be announced, C. W. Strickler, Atlanta, Ga.

SECTION ON SURGERY.

Duncan Eve, Chairman,
Nashville, Tenn.
Michael Hoke, Vice-Chairman,
Atlanta, Ga.
W. P. McAdory, Secretary,
Birmingham, Ala.

Chairman's Address, Duncan Eve, Nashville, Tenn.
"Tuberculous Bladder," M. C. Shivers, Colorado Springs, Colo.
"Operative Treatment of Inguinal Hernia," L. Sexton, New Orleans, La.
Some Interesting Cases of Brain Surgery," Jere L. Crook, Jackson, Tenn.
"Ligature Material and After Treatment of Surgical Cases," H. T. Inge, Mobile, Ala.
"Surgery in Epilepsy," W. A. Bryan, Nashville, Tenn.
"Strains and Dislocations of the Sacro-Illiac Joints," Edward S. Hatch, New Orleans, La.
"A Simple Effective Surgical Technique," Ira J. Sellers, Birmingham, Ala.
"The Importance of Proper Shoes; Their Relation to Deformities of the Foot and Body Efficiency," E. Lawrence Scott, Birmingham, Ala.
"Remarks on the Management of Perforating Gastric and Duodenal Ulcers," M. M. Jordan, Birmingham, Ala.
Title to be announced, W. M. Peters, Centreville, Ala.
"The Prevention of Deformity by the General

Practitioner; Report of Orthopedic Cases," Willis C. Campbell, Memphis, Tenn.
"Local Anaesthesia in Herniotomy," W. T. Henderson, Mobile, Ala.
"Pistol Shot Wound of the Left Ventricular Cavity, without Hemorrhage. Exhibition of Specimen." Herman B. Gessner, New Orleans, La.
"Echinococcus Cysts of the Liver, with Report of Cases," W. Gillman Winthrop, Mobile, Ala.
"Use of the X-Ray in Surgery," Amadee Granger, New Orleans, La.
"The Present Status of Anaesthesia," Clarence Hutchinson, Pensacola, Fla.
"Fibroid Tumors of the Uterus," J. Hughes Carter, Memphis, Tenn.
"Endometritis and Some of Its Complications," T. Joseph Dean, Union Springs, Ala.
"The Early Diagnosis and Operation for Gall-Stones," Gaston Torrance, Birmingham, Ala.
"Present Status of Gall-Bladder Surgery," W. R. Jackson, Mobile, Ala.
"Surgery of the Gall-Bladder," E. C. Davis, Atlanta, Ga.
"Diagnosis of Genito-Urinary Diseases with Report of Cases," George R. Livermore, Memphis, Tenn.
"Ureteral Calculi," W. T. Clary, Memphis, Tenn.
"Report of a Case of Unusually Large Ureteral Calculus," J. N. Baker, Montgomery, Ala.
"Further Considerations of Prolapsed Kidney," J. A. Crisler, Memphis, Tenn.
"The Surgical Treatment of Congenital Pyloric Stenosis, with Report of Case," G. E. Gavin, Mobile, Ala.
"The Diagnosis and Course of Simple and Compound Fractures," R. J. McFall, Erin, Tenn.
"Better Treatment of Fractures," W. F. Westmoreland, Atlanta, Ga.
"Atypical Appendices in a Series of One Hundred Cases," W. R. McKinley, Columbus, Miss.
"Appendicitis," Willis Jones, Atlanta, Ga.
"Appendicitis," J. M. Wilson, Mobile, Ala.
"The Abdominal Drain and the Thru and Thru Suture," H. A. Elkourie, Birmingham, Ala.
"Peritonitis," Richard A. Barr, Nashville, Tenn.

SYMPOSIUM ON SYPHILIS WITH SECTION ON MEDICINE.

Title to be announced, J. D. S. Davis, Birmingham, Ala.
Title to be announced, L. B. Hudson, Hattiesburg, Miss.
Title to be announced, Isadore Cohn, New Orleans, La.
Title to be announced, Carroll W. Allen, New Orleans, La.

SECTION ON OPHTHALMOLOGY.

M. M. Cullom, Chairman,
Nashville, Tenn.
Richmond McKinney, Vice-Chairman,
Memphis, Tenn.
U. S. Bird, Secretary,
Tampa, Fla.

Chairman's Address, M. M. Cullom, Nashville, Tenn.
"Cataract Extraction with Corneal Suture," E. C. Ellett, Memphis, Tenn.
"The Relative Value of Atropine and Homatropine as a Cycloplegic," Hugh M. Lokey, Atlanta, Ga.
"Requirements for the Prescribing of Glasses," W. A. Stevens, Memphis, Tenn.
"The Modern Pathology and Treatment of Glaucoma," G. C. Savage, Nashville, Tenn.
"Nasal Reflexes," W. G. Harrison, Birmingham, Ala.
"Some Interesting Cases," M. H. Bell, Vicksburg, Miss.
"Operative Treatment of New Growths in the Larynx," Richmond McKinney, Memphis, Tenn.
"Experiences in European Clinics," John L. Scales, Shreveport, La.
"Edema of the Glottis," A. C. Lewis, Memphis, Tenn.
"Demonstration of Pathological Specimens," M. Feingold, New Orleans, La.
"Uric Acid and Indican Bearings on Diseases of Eye, Ear, Nose and Throat," James M. Guthrie, Meridian, Miss.
"Tonsillectomy as Performed in the Charity Hospital Service of Drs. DuPuy and DePoorter," Homer DuPuy, New Orleans, La.
"Sympathetic Opthalmia," U. S. Bird, Tampa, Fla.
"Treatment of Trachoma by Massage, with Report of Cases," A. E. Maumenee, Mobile, Ala.
Title to be announced, H. H. Martin, Savannah, Ga.
Title to be announced, Arthur I. Weil, New Orleans, La.
Title to be announced, S. Kirkpatrick, Selma, Ala.
Title to be announced, C. J. Lanfried, New Orleans, La.
Title to be announced, W. C. Lyle, Augusta, Ga.
Title to be announced, A. B. Dancey, Jackson, Tenn.

The A. M. A. Council on Medical Education

The advance in medical education during the last few years has been so great and extensive as to cause general surprise and admiration. It did not begin any too soon. Even the best medical schools in the country were in many respects derelict in their duty to students of medicine and to the general public who believed that their diplomas were certificates of competence that were thoroughly reliable. Such being the case it is easy to imagine the conditions that prevailed in many of the inferior schools, most of which depended upon fees for their support, and accepted any sort of supposed proof of preliminary education preparatory to the study of medicine. There were honorable exceptions. Some of the schools of medicine, inspired by a true spirit of altruism, proceeded step by step to lengthen their terms from five to six, seven and eight months, and to increase the number of years requisite for graduation from two years to three and then to four. But praiseworthy as was this action, it was irregular and incomplete, and the diploma mills flourished mightily.

Then appeared upon the scene three powerful agencies for the uplift of medical education. They were the Association of American Medical Colleges, the Carnegie Foundation, and the Council on Medical Education created by the American Medical Association. It is concerning this latter agency that this

article is penned. It is constituted as follows: A. D. Bevan, Chairman, Chicago; W. T. Councilman, Boston; J. A. Witherspoon, Nashville; James W. Holland, Philadelphia; Victor C. Vaughan, Ann Arbor; N. P. Colwell, Secretary, Chicago.

These gentlemen are so widely known all over the United States that they need no introduction from us. Their plan of operation was extensive and complete. Their first step was to acquire accurate information concerning the situation. To this end, Dr. Colwell, the Secretary, with one or two assistants, made two complete tours of the United States and Canada, during each of which they visited every school of medicine in both countries. They made accurate investigations and notes relating to the laboratory, hospital, clinical, and other teaching facilites; of their grades of entrance requirements, standards of scholarship and graduation, character and ability of teachers, style of records kept, museums and libraries and any and all information that would enable them to place before the full Council data from which to form reliable judgments concerning each school.

After long and careful deliberation they proceeded to the task of classification. Schools that were satisfactory, to a certain per cent, were placed in class A; those which could be made satisfactory by reorganization and additions were placed in class B; those utterly worthless in class C. They reserved publication of this classification for over a year, thus affording opportunity for improvement, and letting it be understood that at a future time the marks would be reconsidered, and given according to the then conditions.

Although the task thus accomplished by Dr. Colwell and his assistants was like the labor of Hercules in the Augean Stables, yet they succeeded in cleansing medical education from its load of unworthiness and incompetence. Many of the most undesirable schools have gone entirely out of business, others that could not stand the test have merged their interests with other schools, and there has been a notable upward advance all along the line. The standard of entrance requirements suggested by the Carnegie Foundation has been adopted by all the colleges in class A, and a few require a college diploma. The habit of conditioning students who had failed to pass examinations or who could not present the required proofs of the educational qualifications had opened wide the door to those who wished to dodge the regulations. This condition prevailed in all the colleges, with very few exceptions.

That door is now closed so tightly that the student who enters through the crack has to work his way.

The result of all this is a magnificent purification and elevation of medical education. True, some unworthy colleges still survive, but the State Boards of Examiners all over the country have imbibed the spirit of the Council, and are beginning to so thoroughly sift out their graduates by requiring proofs of proper preliminary education that it is becoming less and less a temptation to students to attend a school because it is cheap.

The work of the Council is one of persuasion and enlightenment, not of coercion. The only force invoked is that of public and professional opinion, evoked by published facts. To enumerate the many excellent recommendations evolved from their unparalleled opportunities for observation would require more space than is here available. Though the Chairman and every member of the Council deserve great credit for their thorough and courageous work, for "Standing like a stone wall" against the storm of argument, protest, and villification which assailed that body when the ratings were published, and carrying to consummation this great reformation, yet, as is the case in all organizations of the kind, the Secretary does most of the work, bears most of the responsibility and deserves chief praise.

Dr. Colwell has shown throughout a broad

and liberal spirit that has tempered his keen, critical ability. He has not believed in "quenching the smoking flax," but wherever he recognized the spark of proper ethical ambition he has encouraged it, and favored the struggling school just as far as policy, propriety and justice would warrant. His work is not for today alone, but for all time. We are justly proud of living in a day when the mind of man is conquering the forces of nature, but the work of Dr. Colwell and his associates is overcoming much more rugged difficulties than those of the Isthmus, namely, the crude, undisciplined impulse of that same human mind, that worships, greed and unearned profits at the expense of the people at large.

When the great canal shall have been outworn and supplanted by undreamed of inventions, the work done by him and his associates, though perhaps forgotten, will still exert a beneficent influence over civilized humanity. Let us throw our bouquets while still the eye can rejoice in their beauty and the heart be warmed by well earned praise.

New Departure of the Chicago Tribune

"Coming events cast their shadows before," sang the poet, and in modern life the agency which, more than all others, keeps a sharp lookout for the aforesaid shadows is the newspaper press. So when we see a great, aggressive paper like the Chicago *Tribune* establishing a department devoted to public health, and placing at the head thereof a man whose reputation is a synonym for hygientic advance in every line of public effort, we may look out for a profound upheaval of public opinion regarding the importance of protecting the health and lives of the people, regardless of age or condition.

The *Tribune* names its new department "How to Keep Well," and it appears on the editorial page during the week and in a special location on Sunday. The new departure has been placed in the hands of the man qualified above all others to make it a success. His name is W. A. Evans, and thereafter he may write M. S., M. D., LL. D., and P. H. D.

Unlike the string of meaningless abbreviations so often seen in so-called medical directories strung out after the names of assuming nonentities, every one of these represents work well done and honor well earned. A list of the honorable and strenuous positions he has filled would cover half this page. The last abbreviation, P.H.D., stands for Doctor of Public Health, recently conferred by the University of Michigan, and it is said that only one other man in the country holds that degree. He is also professor of hygiene in the Northwestern University, and was formerly Health Commissioner of Chicago. He stands today at the head of that active, enthusiastic, specially prepared body of scientists who have devoted their lives to the task of teaching their fellow-men how to ward off disease, suffering and premature death, from themselves and the helpless ones dependent on them.

As Health Commissioner of Chicago he achieved a wonderful success and undoubtedly saved thousands of lives through the wise and timely measures he inaugurated.

Dr. Evans thoroughly appreciates the fact that in this country, where every man is his own master and will not submit to coercion, the only way to cause people to adopt proper modes of life is to educate them in the elements of hygiene and sanitation. No man is more finely equipped for such work than he. His studies and his efforts have for years been along these lines. He has the rare and valuable gift of imparting to uneducated laymen profound scientific truths in such plain language that they conclude the whole matter is quite simple after all.

Such men as he are rare, and, when found, should be given every opportunity to exercise their talents for the public good. The *Tribune* is most fortunate in securing Dr. Evans as editor of its health department, but humanity

is the greatest benefactor, because his teachings will no doubt be the means of enlightening thousands upon the principles of personal and public health.

Another Advance in Synthetic Medical Chemistry

These few paragraphs are to invite attention to the might, the wonderful potentialities of some of the drugs used in modern medicine, and to a forward step in their synthetic evolution. We handle every day substances, a minute particle of which, properly placed, can shake the muscular systems, squeeze the blood out of the vascular mazes or upset the telegraphic tangle of nerves of the strongest man. What is meant by a minute particle? Well, take suprarenin. In solutions where approximately ten thousand drops—or, speaking accurately, ten thousand grains—of water hold only one grain of suprarenin, one drop of it will squeeze the blood out of the conjunctival capillaries or those of the internal surface of the bladder whenever it comes in contact with them. And what a very small amount is this one grain, thus, when divided into ten thousand parts, capable of changing tissue conditions, relieving congestions and making more easy some of the most delicate surgical operations. This wonderful substance is interesting from still another point of view. Originally it was derived from the suprarenal capsules of animals. Such being the case, it was accepted as one of nature's mysteries, as an inimitable product of animal life necessary to animal existence, another illustration of *omne vivum ex vivo* (if that is good latin).

But now comes a patient German searcher for new combinations, Stoltz by name, and proclaims the evolution from oxygen, phenol, methyl, etc., of a true synthetic suprarenin, identical in chemical composition, physical characteristics and physiological effects with the suprarenin extracted from the suprarenal glands of animals. If further experience proves the soundness of these claims, it will apparently stand as a most important step forward in synthetic medicine. True, we have a few such remedies closely imitating the so-called active principles of plants, but there is always a difference. Synthetic salicylic acid and oil of gaultheria, for instance, are generally believed to be medicinally inferior to the true vegetable product. But here is an animal principle of great potency synthetically produced from lifeless minerals and claimed to be identical in every respect.

The fact that both phenol and methyl alcohol are derived from the products of vegetable life does not weaken the position.

Here is a substance necessary to animal life for the manufacture of which the animal organism employs a complex mechanism, actually produced in a chemical laboratory controlled by human intelligence. Were accident or disease to destroy or disable the supra-renal glands of a man or an animal, the proper administration of this man-made product would maintain normal life, so far as that need was concerned, so long as it was properly administered. If anything like this has ever before been done, it has not come to the attention of the writer. One product necessary to vital action synthetically produced! How many more will come only the future can show.

Cacodylate of Sodium for Pellagra

In view of the growing importance of pellagra as a matter of life and death to thousands, as a factor in health and mortuary statistics, and as an influential item among the causes militating against the attraction of population and capital to our part of the country, it is well for our doctors to be wide awake for its detection and well qualified in its treatment. The multiplication of plans claimed to be successful and of drugs claimed to cure the disease demonstrates not the ease with which it may be managed, but proves the absence of

any such specific as is quinine for malaria or mercury for syphilis.

Several, however, who have had considerable experience in the treatment of pellagra, report in detail numbers of cases that seem to have recovered under certain lines of treatment, notably with calcium sulphide.

In the A. M. A. Journal for August 26, 1911, Dr. J. O. Elrod, of Forsyth, Ga., describes the clinical history of four typical severe cases of pellagra, each of which, though in a desperate condition, promptly recovered under the use of "three grains of the sterilized solution of cacodylate of sodium" every three days. Without exception, these cases promptly improved and went on to apparent recovery. Heart tonics, blood tonics, etc., were used also, but had been freely given before beginning the cacodylate, yet without effect until it was begun.

Exactly what Dr. Elrod means by "three grains of the sterilized solution" is not quite plain, but possibly he intends to indicate three grains of cacodylate of sodium in sterilized solution. This would be a large, but not necessarily a poisonous dose. *Merck's Index* gives the dose as "from ½ to 2 grains (0.03-0.12 Gm.)."

A point of importance to which we would call attention is that all four of these recoveries occurred in the season of the year when pellagra generally gets worse in spite of treatment. One case was relieved about March 1, one early in June, one late in May and the fourth early in June.

Every case originated either in a house where another pellagrin had previously dwelt or near to such a house, and all lived adjacent to streams or marshes. Two of them had "never eaten cornbread to any extent."

Dr. Elrod is convinced that the disease is not caused by maize, but depends upon an insect host for transmission. The etiology of pellagra never having been demonstrated, each man is entitled to entertain whatever theory his experience favors, and the more theories the better. Some day one of them will lead some investigator along the right track, and another laurel leaf will be added to the crown of preventive medicine.

Authority Versus Fact

We frequently speak, in medical parlance, of the opinion of "the latest authorities," "the highest authorities," and so on, and quote their opinions with a respect approaching reverence. We seem to feel that what they believe must be true, and whatever they condemn is beyond the pale. It is a comfortable doctrine to one who has access to the books and journals wherein said authorities promulgate their views, absolving one from all responsibility so long as one follows the authorities. This would be very nice if mortals were infallible. It would be tolerable even as we are but for a certain vice called "pride of opinion," which leads a man to value consistency more than actuality, to adhere to an error because he once proclaimed it, to maintain that "the horse was fifteen feet high."

A notable instance of the variation between truth and authority is seen in the treatment awarded to *veratrum veride* by most of the text books on materia medica and therapeutics. This JOURNAL publishes, on another page, a letter from a reputable physician wherein he expresses his surprise at the wide difference between the teachings of the text books and colleges concerning that drug, and the practical use made of it by physicians in active and successful practice, and the views he expresses are held by thousands of doctors in every part of this country. Except in fashionable practice in large cities *eclampsia* spells *veratrum* to the experienced doctor, and spells it promptly and without hesitation. Few months pass without the published testimony of some prominent physician to its almost specific effect in *eclampsia*, some of them gaining their experience in large maternity hos-

pitals. *All who have used* it testify to its safety and certainty in that disease, and many also use it whenever execssive arterial tension needs correction. Yet the text books generally dismiss *veratrum* with a brief reference to the latter property, and state that its therapeutic effects are identical with those of aconite. It is even suggested that because of this likeness it may well be dropped from the pharmacopeia.

The reverence of the average doctor for the spoken word of an "authority" is almost painful.

The writer was present at a meeting of the Section on Materia Medica of the A. M. A. when a well known author read a fine paper devoted to aconite and veratrum. He elegantly and forcefully dilated through page after page on the demonstrated properties of aconite, but when he finished that and came to the consideration of *veratrum,* he dismissed it with a few words, on the ground that it was so *identical in effects* with aconite that what was said of the latter might be held to apply to the former.

Then he sat down. Two or three members briefly complimented the paper in the usual way, but not one dissenting voice was heard. Finally, as another title was about to be called, one of those fellows who is always rushing in where angels fear to tread, rose, and fearfully begged permission to ask a few questions. The request was graciously granted. He said (in effect): "Does aconite ever cause death?" "Yes, of course. Improperly used, it is a violent poison." "Did you ever know a case of death from *veratrum?*" "Well, I do not remember one just now." "Did you ever hear of such a death?" "Not that I now remember, but it is seldom used. Probably there are members present who have seen such a death." "Will any gentleman present who ever knew or heard of such a case please say so?" No one spoke. Then the "butter-in" gave his long experience and observation with *veratrum* in eclampsia and sat down, after which several rose to corroborate him. The point is, we are afraid to oppose an "authority," lest we get "sat down on." Not a "sensible" man there dared lead the attack. And it is so in many things besides *veratrum,* in which particular case each successive edition of the original error has to reassert "the horse is fifteen feet high," and each new author bows to his predecessors.

To the true doctor there is but one "authority," and that is *the truth as demonstrated by clinical experience,* and when "original workers" run against that rock, all the test tubes and balances on earth will be shattered. It is only when they *support* and *explain* clinical findings that they can bolster authority.

The Refuge of Ignorance

At the Los Angeles meeting of the American Medical Association last June, Dr. M. H. Fussell, of Philadelphia, read a paper entitled "The Danger of Certain Proprietary Preparations to Both Physicians and Public." He proceeded to show how illogical it is to prescribe unchanging mixtures for different conditions bearing the same names. Accidents, over or under actions, dope habits and so on were some of the almost inevitable results.

He expressed his wonder that such preparations are so widely used. In opening the discussion, Dr. Theodore G. Davis, of Los Angeles, gave some of the reasons why such is the case. He believes that "The reason medical men of today use these proprietary preparations is that they know nothing about medicine, for they have not been taught medicine. They know nothing about the drugs they use. All they practically care for appears to be the dose. You cannot get the younger medical students to study pharmacology or therapeutics." He gives as the reason for this indifference the absence of any requirement for examinations in those branches, at least in California. He resigned his position as teacher of materia medica and therapeutics

because students could graduate without having a passing mark therein. He believes that this condition prevails not only in California, but elsewhere.

In closing the discussion, Dr. Fussell disapproved the practice of dispensing drugs instead of writing prescriptions. It seems to the writer that the physician who dispenses his own drugs is much less likely to dispense proprietary medicines than he would be to prescribe them were he to write prescriptions all the time. Though there are arguments against dispensing, there are also reasons for it. It certainly draws more closely together physician and patient, and assures the latter of promptness in beginning treatment, instead of, as too often happens in the busy season, having to wait perhaps for hours before his medicine can be prepared and sent to him. But this is only possible to the physician who knows his materia medica and therapeutics. Provided with a reasonable assortment of such preparations and drugs as the United States Army medical service furnishes to its surgeons he can initiate his treatment in the sick room and then write out any further or more complicated formulae he may wish used and send them to the drugstore, knowing tha their delivery will be awaited with patience.

On the other hand the doctor who is untaught in materia medica and therapeutics, who has not acquired a knowledge of the properties and effects of drugs or how they should be compounded can neither dispense nor prescribe. He must either pose as a therapeutic nihilist or use proprietary remedies according to the plan of the old black mammy who said: "Ef yo' is got de stummick ache, take some o' dis yer Painkiller. I know its good for dat, 'cause de man what sold it tole me so."

But what sort of a school of medicine is it that will graduate a man who is thus utterly ignorant of the tools of his trade! Fortunately such institutions are rare, and becoming more so every day.

But alas for the mischief already done, the bright young student minds diverted from necessary study, and the thousands of sufferers who have been defrauded of available relief by this nihilistic idiocy.

THERAPEUTICS.

Hypnotics.

"He giveth His beloved, sleep."

So sang England's inspired poet-wife of the poet Browning, and to the one, sick or well, to whom slumber is coy no greater blessing can come than gentle, natural sleep. The medicines recognized in therapeutics as sleep producers are technically called hypnotics.

Hypnotics are agents that cause sleep and, secondarily, may tend to relieve pain. The latter is not true of all hypnotics except so far as the removal of the mental anxiety inseparable from suffering helps to reduce the anguish. The number of substances offered as hypnotics is constantly increasing, but a study of six or seven will place at our disposal those that have been proven reliable.

CHLORALUM.

Chloral, or chloral-hydrate as it is sometimes called, stands at the head of hypnotics, the oldest and most reliable. It has many disadvantages, but they are outweighed by its certainty, manageableness, and freedom from remote and irremediable mischief that sometimes comes so unexpectedly after using other and newer hypnotics.

Chloral occurs in colorless, transparent crystals, with a peculiar, penetrating, acrid odor and a caustic taste. It is soluble in all ordinary solvents and liquefies when triturated with camphor, thymol, menthol or phe-

nol. It is pharmaceutically incompatible with alkalies, and physiologically antagonistic to nitro-glycerin, atropin and strychnine. The poisonous dose of chloral is so uncertain that the utmost care must be observed in prescribing it. Fifteen grains is said to have proved fatal in one case, while 460 grains (30.0 Gm.) are reported to have been taken without serious results. Idiosyncracy and cardiac lesions must lie at the bottom of such divergent consequences. Overdoses cause a fall of blood pressure, slow pulse and weak heart action, with external low temperaturee.

The symptoms of acute chloral poisoning are, profound coma, feeble, slender, irregular pulse, slow respiration, subnormal temperature and free perspiration of the face and forehead. Death follows suspension of respiration. The remedies are cocaine, strychnine, nitroglycerine and atropine hypodermatically, enemas of strong coffee, artificial respiration, oxygen and external heat. Chronic chloral poisoning is manifested by pallor, anemia, erythematous eruptions, weakness of the knees, occasional dyspnoea and drowsiness. Treatment is to gradually withdraw the drug, build up the system with hematic tonics and hygienic living, and change of environment.

Chloral is a powerful antiseptic. This property is used for the preservation of specimens, dressing gangrenous or cancerous sores and sometimes for disinfecting bedpans and similar vessels.

A 10 per cent solution, one ounce at a time, has been used successfully as an injection in hydrocele. A crumb of chloral, wrapped in a few fibers of absorbent cotton and pressed into the cavity of an aching tooth, will instantly relieve the pain. Liquefied by trituration with an equal quantity of camphor, and applied to the skin, it quickly vesicates, and if the contact is continued, sloughing may result.

Its most valuable property is that of causing a sleep that closely simulates natural slumber. For this purpose it is often combined with bromide of potash and tincture of hyoscyamus. This mixture is one of the most popular hypnotics in use. Under a copyrighted name, and with the addition of some cannabis indica, which is a disadvantage, it has been used by physicians and the laity throughout the English speaking world. Both the odor and taste of chloral are very objectionable to most people and only its efficacy has maintained its general use. The following prescription has been found less objectionable to those senses than many others:

R.

Chloralis ..... drachms IV (16 Gm.)
Potassii Bromidi.....drachms VI (24 Gm.)
Tincturae Hyoscyami .....
.....fluid drachms VI (24 cc.)
Syrupi Limonis.....fluid ounce I (30 cc)
Syrupi Tolutani q. s.....
.....ad fluid ounces III (90 cc.)
Misce. Fiat solutione.

Signa: "Dose, a teaspoonful in wineglass of water, at bedtime. POISON!"

Chloral is irritating to the stomach and intestines, and consequently should not be prescribed when such conditions are present. It is also depressing to the heart muscle and therefore should be very carefully used, if at all, in cases of weak heart. It is equally efficient when given by the rectum as when by the mouth. This circumstance sometimes enables us to use it when constant vomiting would otherwise prevent. In delirium tremens the prescription just suggested will be found very useful, each teaspoonful representing 15 grains (1.0 Gm.) of the potash salt, and 10 (0.6 Gm.) of chloral. In such cases the dose may have to be repeated a few times at intervals of an hour.

In puerperal convulsions immense amounts of chloral have been given and no fatal results followed. In one such case the writer gave an ounce, 480 grains (30.0 Gm.) during some 18 hours, and the woman recovered. No record was kept of the amount of the bromide used at the same time, but it could not

have been less. Such a case can be no standard of practice or safety. It is only in the desperation of failure of all other known resources that such extravagant dosage is allowable. Better remedies for eclampsia are now known, especially veratrum.

In tetanus, strychnine poisoning, spasmodic and convulsive conditions, chloral is a reliable remedy in appropriate doses. In the nervous insomnia of fevers it has been advantageously used, especially in the first stages. Later, when asthenia sets in, the depressing influence of chloral on the heart must be remembered.

It is considered by many a safer drug with children than with adults. In the forms of cerebro-spinal meningitis often seen in infancy large doses of the compound before suggested have been given for a considerable period of time with apparent relief after each dose.

Though so extremely irritating and even destructive to tissues when applied in concentrated form, it is yet recorded that the hypodermatic injection of 15 grains (1.0 Gm) has had marvelous efficacy in the collapse of Asiatic cholera and severe cholera morbus, but such medication is of doubtful propriety.

Chloral is extremely valuable in obstetric practice. When the patient has become wearied with long continued pains and the contractions have become weak and ineffectual, 5 grains (0.3 Gm.) of the drug will generally induce an hour of unbroken rest and sleep, after which she will awaken refreshed and invigorated, and the parturient action will be successfully renewed. If, after fifteen minutes, the first dose has not caused an intermission of pains, a second should be given. If this fails, it is useless to try further. These small doses show no effect upon the infant.

In seasickness small doses administered before rising have given relief. In the vomiting of pregnancy, where it is accompanied with constant nausea, small enemata of warm saline solution, containing 5 grains (0.3 Gm) have sometimes afforded great comfort if not complete relief.

BOOK REVIEWS

GOLDEN RULES OF PEDIATRICS.

By John Zahorsky, A. B., M.D., Clinical Professor of Pediatrics, Medical Department, Washington University, St. Louis. With an Introduction by E. W. Saunders, M.D., Emeritus Professor or Diseases of Children, Washington University, Medical Department. 284 pages. C. V. Mosby Company, St. Louis, Mo. Price $2.50.

This little book contains aphorisms, observations and precepts on the science and art of pediatrics, giving practical rules for diagnosis and prognosis the essentials of infant feeding, and the principles of scientific treatment. It is very interesting, and will no doubt find its way into the libararies of many physicians, as it deserves to do. Aphorisms and maxims serve often as helpful rules in diagnosis.

AN INTRODUCTION TO DERMATOLOGY.

By Norman Walker, M.D., F. R. C. P., Physician for Diseases of the Skin, The Royal Infirmary, Edinburgh. Fifth edition, with 43 colored plates and 79 illustrations in the text, which has 346 octavo pages. Wm. Wood and Company, 51 Fifth Avenue, New York. Price $4.00 net.

This is a revised edition, entirely rewritten, adhering to the original plan of the first edition, which is practically a reproduction of the lectures delivered by the author before his students. It does not profess to be a complete work on Dermatology, only an introduction, but it gives a most excellent general idea of this interesting, but at times perplexing subject.

A feature deserving of special mention is that of illustration. Nowhere have clearer plates been printed, which, because of their variety, become intensely helpful to a clear understanding of the various eruptions, new growths, and inflammations of the skin described by the text.

A WORKING MANUAL OF HIGH FREQUENCY CURRENTS.

By Noble M. Eberhart, A.M., M.S., M.D. Professor and Head of the Department of Electrotherapy. Chicago College of Medicine and Surgery; Professor of Radio-therapy, High Frequency and Vibration, Illinois School of Electro-therapeutics. New Medicine Publishing Company, Chicago, Ill., Chicago Savings Bank Building.

An excellent, thorough, practical text book.

A MANUAL OF CHEMISTRY.

By Arthur P. Luff, M.D., B. Sc. Lond., F. R. C. P., F. I. C. Physician to St. Mary's Hospital, and

Joint Lecturer on Medicine at St. Mary's Hospital Medical School; and Hugh C. H. Candy, B.A., B. Sc. Lond., F. I. C., Lecturer on Chemistry in the London Hospital Medical College. New and enlarged edition, 622 pages, illustrated. Chicago Medical Book Company, Chicago. Price $1.75.

Medical chemistry is receiving considerably greater emphasis in the curricula of our leading medical institutions at the present time than ever before. This is largely due to the increased usefulness of this important science as an aid in the diagnosis of disease. The student of medicine needs a special text on "medical chemistry" dealing with those things which will be essential to a complete understanding of its bearing on diagnosis. This manual deals with the essential facts of chemistry, in a clear way, and also carefully describes the fundamental principles of the science. It is especially valuable for its tests of the ordinary impurities, organic as well as inorganic. It embraces a full consideration of the principles and facts of inorganic and organic chemistry, and qualitative and quantitative analysis.

INEBRIETY.

A Clinical Treatise on the Etiology, Symptomatology, Neurosis, Psychosis and Treatment, and the Medico-legal Relations. By T. D. Crothers, M.D., Superintendent Walnut Lodge Hospital, Hartford, Conn. 365 octavo pages. Harvey Publishing Company, Cincinnati, Ohio. 1911.

The author states in the preface that the alcoholic question is positively one of the greatest medical and social science problems confronting the civilization of today. Every sociological and scientific study of degeneration and disease reveals the magnitude of the alcoholic influence, and its intimate relations to individuals and society, and its destructive effects on the social, hygienic and physiological development of the race.

It is a lamentable fact, as pointed out by the author, that inebriety in America is different from other countries, and possesses marked peculiarities. He states that business men with a reputation for conservatism and reliable conduct, who suddenly become speculators and erratic in their judgment, are often found to be moderate drinkers. It is rare that *moderate* drinkers can continue as such long, for the average drinker, in the psychical atmosphere of America, finds the necessity and occasion for using spirits at any time, for their effects; and if they are not sufficiently potent more is taken until the system becomes saturated. He states that the intensity of living in this country seems to call for relief and narcotism of alcohol.

That which is of particular interest, just at this time, is the chapter on the pathology of inebriety. He says that the pathology of inebriety is an obscure record of a long series of shocks, injuries, degenerative changes and explosive liberations of nerve energy, often beginning with defective cells and growths, and going on for years.

The degenerations most prominent are sclerosis and calcification of the coats of the arteries, with atrophic and hypertrophic states of the organs, and other defects.

To sum up we will say that all the evidence, unbiased and unprejudiced, which the author presents, points conclusively to the fact that alcohol is doing more damage on the human system than we are aware of, or recognize.

DIFFERENTIAL DIAGNOSIS.

Differential Diagnosis. Presented through an Analysis of 383 cases. By Richard C. Cabot, M.D., Assistant Professor of Clinical Medicine, Harvard Medical School. Octavo of 753 pages, illustrated. Philadelphia and London. W. B. Saunders Company, 1911. Cloth, $5.50 net.

Dr. Cabot, in the "Introduction," discusses the presenting symptom, in its relation to the disease, as a point of contact of the physician with the patient. There is no doubt that this leading symptom may lead towards the right or the wrong conclusions in the question of diagnosis, prognosis and treatment, and this is especially so in the case of the doctor who has not "learned the art of following it up." One of the purposes of the book is to aid the student in acquiring this "art." Many times the history of a case is so incomplete, that without a knowledge of the usual causes of the symptoms most prominent, one is often seriously handicapped in diagnosis, and such a condition can eventually be overcome to a degree by a thorough study of a text like the above.

The plan thus outlined has three parts:

(*a*) To present a list of the common causes of the symptoms most often complained of by the patient, e. g., the causes of pain in the back, of vomiting, or of hematuria.

(*b*) To classify these causes in the order of their frequency, so far as this is possible.

(*c*) To illustrate them by case-histories in which the presenting symptom is followed home until a diagnosis problem and its solution are presented.

As the author states, many times the diagnoses are missed, because of failure to associate with each symptom all the possible causes, or from a failure to make a thorough examination of the patient. The plan of this work aims at thoroughness of examination, and accurate classification of symptoms, thus leading to successful diagnosis.

Case teaching has developed to an important position in the modern medical institution, and the physician who studies such a work as the above, can have an opportunity of taking a clinical course at his office.

A MANUAL OF PRACTICAL HYGIENE.

For Students, Physicians and Health Officers, by Charles Harrington, M.D., late Professor of Hygiene in the Medical School of Harvard University. Fourth edition, revised and enlarged by Mark W. Richardson, M.D., Secretary to State Board of Health of Massachusetts. Octavo, 850 pages, with 124 engravings and 12 full-page plates, in colors and monochrone. Cloth, $4.50, net. Lea & Febiger, Philadelphia and New York, 1911.

Sanitation and preventive medicine are paramount issues in the medical profession to-day. Rightly so, for the great object of medicine is health, and anything which may bring about such conditions deserves the support of the "teaching forces" of our civilization. "The intelligent portion of the laity is becoming well informed on matters of hygiene, and it behooves the profession to lead instead of being

pushed along its own ground." We have at hand a text-book on hygiene which has been of immense service in instructing not only the medical profession but the teachers of our schools as well. No one can estimate the good this excellent work by Dr. Harrington has accomplished, and we are not surprised at its universal acceptance; the demand for its revision in order to keep abreast with the developments in methods and measures, proves its popularity.

The distinguished author began his revision, only to give it up half finished, for death claimed him as the result of overwork. However, Dr. Richardson. his successor on the Massachusetts Board of Health, has most fittingly completed the work, and the book now represents the latest developments in the whole range of subjects included in its title.

MODERN TREATMENT.

Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica, Jefferson Medical College, Assisted by H. R. M. Landis, M.D., Director of the Clinical Department of the Phipps Institute (University of Pennsylvania). In two volumes. Volume II. Illustrated, with 900 octavo pages. Lea & Febiger, Philadelphia and New York.

As was stated in the review of the first volume, this work is of peculiar value to the profession, presenting in the two volumes a complete system of modern treatment. It has been contributed to by eminent specialists of foreign countries as well as America. This was a mammoth undertaking, and Drs. Hare and Landis deserve all the expressions of appreciation which have been uttered from every source. It will be of inestimable value to the practising physician to have access to such a work as this.

The plan of the second volume is the same as that of the first. It consists of ten parts, each part embracing one of the main divisions of the diseases in medicine. Part 1, takes up the treatment of diseases due to parasitic infection, such as malarial infections, trypanosomiasis, kala azar, uncinariasis, and helmenthiasis, written by Dr. Charles F. Craig, of the U. S. A. Medical Corps, a physician well qualified to speak authoritatively. Other articles are on syphilis, and dysenteries, by Drs. W. S. Gottheil, and T. L. Rhoads.

Part 2. The treatment of diseases of the circulatory system. By Dr. James MacKenzie, and Dr. J. C. DaCosta, Jr.

Part 3. The treatment of diseases of the digestive system and allied organs. By Dr. Joseph Sailer and Dr. Herbert C. Moffitt.

Part 4. The treatment of diseases of the respiratory system. By Dr. George Fetterolf and Dr Arthur Newlin.

Part 5. The treatment of diseases of nutrition and diathetic diseases. By Drs. Elliott P. Joslin, and S. P. Beebe.

Part 6. The treatment of diseases of the nervous system. By Dr. D. J. McCarthy, Dr. James H. Lloyd, Dr. H. F. Harris, Dr. William T. Shanahan, Dr. F. X. Dercum.

Part 7. The treatment of diseases of the genito-urinary apparatus By Dr. James Tyson and Dr. B. M. Anspach.

Part 8. The treatment of diseases of the skin. By Dr. Howard Fox.

Part 9. Non-surgical treatment of diseases of the eye. By Dr. James Thorington.

Part 10. The treatment of diseases of the ear and tympanic membrane. By Dr. S. MacCuen Smith.

Can there be a better selection of physicians to write on the above topics than the editors of this work have made?

PERSONAL HYGIENE AND PHYSICAL TRAINING FOR WOMEN.

By Anna M. Galbraith, M.D., Fellow of the New York Academy of Medicine, 12mo. of 375 pages, with original illustrations. Philadelphia and London: W. B. Saunders Company, 1911. Cloth, $2.00 net.

Often physicians are consulted as to points in the hygiene and physical training of women, and how necessary that proper and definite information should be given, for it is the carrying out of the details in regard to these things, that spares women many of the unnecessary and avoidable ills to which they are heirs, and enables them to maintain their health and make life really worth while. So it is the duty of every physician to know these things, and to have some good book, such as this one, which he can recommend to his patient.

The aim of this book, as stated by the author, is to present in a practical, concise, and clear manner, the essential and fundamental physiological laws upon which all personal hygiene is based, and to carefully direct how these laws may be obeyed, so that the body may be properly cared for and developed, for it is by so doing, that the resistance to disease may be increased. Such a work as this deserves to have a place in every home, and every girl should learn the care of her body and its development early in life.

There is a very instructive chapter on hydrotherapy, containing descriptions of the skin, its functions, and the physiologic effects of water, being followed by directions for administering the various kinds of baths with their indications and contra-indications. Then follows a chapter on the care of the skin and its appendages; the complexion, hair, hands, and feet. The next chapter is on the digestive system and the maintenance of food digestion, in which there are discussions on diet, classifications of foods, action of certain foods and drugs, etc. Then there is taken up, the respiratory and circulatory systems; the kidneys and their functions; the nervous system as the balance of power in the body; the hygiene of the mind and its relation to the physical health. Another chapter, which is of special interest and instruction, is the one on "Dress, the Fundamental Cause of Woman's Physical Deterioration," in which the author shows that the transition in dress according to customs and fashions must answer for some of the deformities and ill health in women, and at the same time warning against the undesirable. Then there is a part of the work devoted to the betterment of the general condition of health, and to physical culture, the methods of developing the body, making the body graceful.

THE PRACTICE OF MEDICINE.

By A. O. J. Kelly, A.M., M.D., Assistant Professor of Medicine in the University of Pennsylvania. Illustrated. Octavo of 945 pages. Lea & Febiger, Philadelphia and New York, 1910. Price, $4.75.

This is indeed a monumental work, which shall perpetuate the author's ability as a student and master of disease, and shall commend itself to the profession as one of the most up-to-date text books on the practice of medicine now available.

The number of texts on medicine is legion, and each has some distinctive feature, so that it has been difficult to find a single volume combining all the salient features. But in this work of Dr. A. O. J. Kelly, it appears that the author has presented a most complete and well balanced text. The purpose of such a work is best explained by quoting from the author: "The following pages represent an effort to prepare for the student and the junior practitioner of medicine a guide to the nature, discrimination, and management of disease that should contain the essentials unadorned with great detail." It is ineed a problem in writing such a book to know, not what to include, but what to exclude, and it can be said of this work, that what is included is that which is essential to a complete understanding of the diseased condition. The author's descriptions are masterful, clear, concise, and elegant.

As the author expresses it, since the final object of medicine is practice, considerable space has been devoted to symptomatology, diagnosis and treatment. Under etiology, all the accepted causes of a pathological condition are clearly set forth, and under pathology, the changes taking place under the above influences are so completely and accurately described that a student cannot fail to clearly comprehend the significance and relation to the symptomatology, next presented.

One feature of the work, which is very acceptable and praiseworthy, is a description of the effects on the physiology of the part, by the pathological condition existing, presented under the heading, "pathological physiology." In this way the student is enabled to grasp better the real significance of each symptom as it apears. The diagnosis of disease is based on the symptomatology and the modern laboratory methods.

In the treatment, one method is emphasized, and usually this method is the one the author has tried and observed in his own experience, otherwise the generally accepted and approved methods are given. This is an improvement over other works, since it avoids confusion on the part of the student. To be specially mentioned is his treatment of typhoid fever, pneumonia, tuberculosis, malaria, cardiac diseases, etc.

Some of the classifications of disease, though not altogether like the usual classifications, are very convenient, and are based on the pathological variations.

This work will demand recognition of the profession.

HEAT EXHAUSTION.

The following abstract from the *A. M. A. Journal* of July 15 is so seasonable that it should receive careful attention.

That form of prostration by heat which is characterized by a cool and clammy surface is more apt to lead to erroneous diagnosis than when the skin is hot and red and the breathing stertorous. The writer has sometimes wondered, when reading, in hot weather, of sudden deaths from "acute indigestion," whether heat exhaustion might not have first paralyzed the digestion, and, with this added depression, extinguished vitality. The *Journal* says:

The treatment of this condition embraces removal of the patient from the influence of the excessive heat to which he has been subjected. If he has been out of doors in the sun, he should be immediately removed to the shade, and as quickly as practicable be taken into a house or to a hospital. He should be placed in bed in a room which is cool and well ventilated. The clothing should be loosened so as not to interfere with respiration or circulation, and his working clothes should be removed, and hot applications, such as hot water bottles or hot bricks, should be placed around his extremities so as to restore the circulation and make him warm. If he is unconscious so that he cannot swallow, inhalations of ammonia should be given by the nostrils. Cold applications, either cold cloths or an ice-bag, should be made to the head; a mustard paste should be applied to the back of the neck and over the spine; and if the respiration is obviously impaired, a hypodermatic injection of 1-100 of a grain of sulphate of atropin should be administered. If the heart is weak, a hypodermatic injection of 1-30 of a grain of strychnin sulphate should be given. As soon as the patient is able to swallow, he should be given half an ounce or an ounce of whisky, unless he was already under the influence of this drug before the attack came on. If the circulation is improved, the body becomes warm, and the patient regains consciousness.

A stimulating enema may be administered to move the bowels. The condition of the bladder should be investigated, and if the secretion of urine is scanty, the patient should be given copious draughts of water, and a little later an attempt should be made to give him nourishment, preferably in liquid form, and preferably hot, or at least warm.

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Where CO-CAPSULIN is not employed, the use of Sol. Supracapsulin (Cudahy) immediately before or after the injection of the solution, reduces the amount of anesthetic required, prevents toxic effects and checks hemorrhage.

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Derived from guaiacol, yet odorless, palatable, non-irritating, Thiocol Roche is antiseptic to the whole respiratory tract, sedative and anti-catarrhal.

"THIOCOL CONSIDERABLY REDUCES THE SEVERITY AND DURATION OF WHOOPING COUGH. Its efficacy is far greater than that of antipyrin, aconite, belladonna, etc., producing neither intolerance nor toxic symptoms. Under its influence the attacks become less severe, the bronchial symptoms are reduced to the minimum, and the vomiting of food becomes less frequent. Thiocol exerts a most favorable influence on the mucous membrane of the alimentary tract."

DR. PINET, in "*Le Concours Medical*," May 14, '04.

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Some are quite efficacious in a few indicated cases but could be dispensed with for the reason that other drugs do the same work better.

But **Nuclein (Abbott)** is a necessity and the doctor who is not making use of it in his practice is handicapping himself seriously.

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ERYSIPELAS	SEPTICEMIA
TYPHOID FEVER	TONSILLITIS
SCARLET FEVER	PNEUMONIA
ANEMIA	RICKETS
CHLOROSIS	DEBILITY

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Grape Juice

For the "Rundown" Child

Physicians prescribe WELCH'S as a tonic liquid food for children showing salt deficiency, as in cachitic affections, scurvy, digestive disturbances and impoverished nervous system.

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by the

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—for the—

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Manufacturers of PHYSICIANS' COATS,
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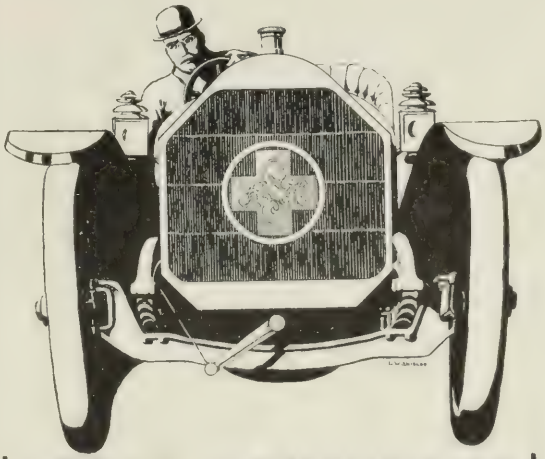

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1612 Diamond Street, Philadelphia

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The B & B reputation has been twenty years in the building. It is the result of infinite care, of ceaseless experiment, of constantly seeking perfection.

Each formula and process is the final result of years spent in study, invention and sifting.

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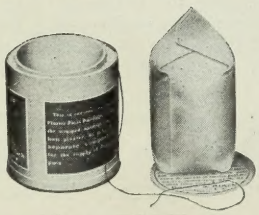

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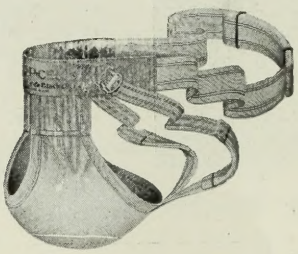
The result is a bandage which is always alike—always the best Plaster Paris Bandage.



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For twenty years, more physicians have prescribed the O-P-C than any other suspensory.

The O-P-C is anatomically correct. It conforms to any size or condition. It affords an even and normal support. It leads to no constriction.

When the suspensory is once fitted, it needs no further adjustment.

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CHINOSOL POSSESSES GREATER ANTISEPTIC STRENGTH, AND IS NON-POISONOUS EITHER EXTERNALLY OR INTERNALLY. IT DOES NOT COAGULATE ALBUMIN, IS NON-CORROSIVE AND DOES NO INJURY TO MEMBRANES

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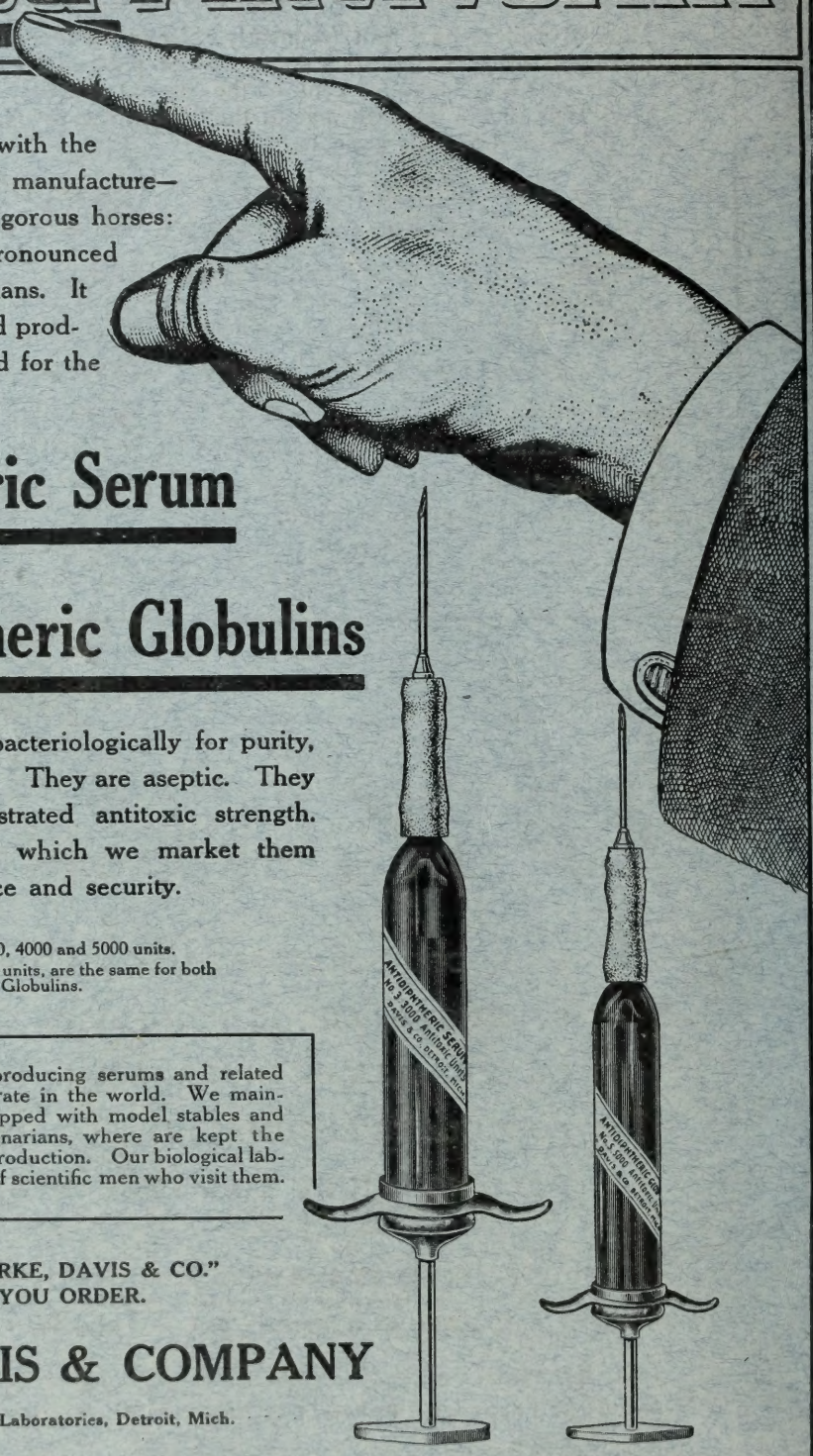
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No. 3 1000 Antitoxic Units
PARKE, DAVIS & CO. DETROIT, MICH.
ANTIDIPHTHERIC GLOBULINS
No. 3 1000 Antitoxic Units
PARKE, DAVIS & CO. DETROIT, MICH.

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Antidiphtheric Serum

AND

Antidiphtheric Globulins

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